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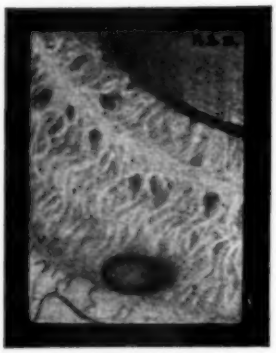

FIG. 1

FREE CYST IN ANTERIOR CHAMBER. (C. A. CLAPP)

FIG. 2

SARCOMA OF THE IRIS. (BURTON CHANCE)

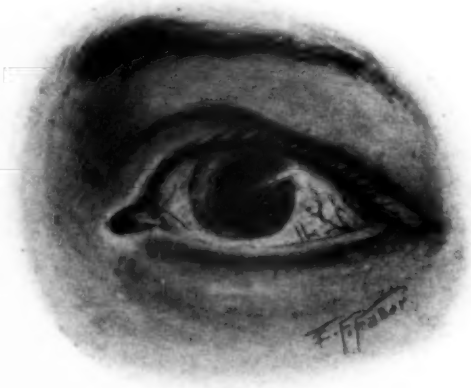

FIG. 3

MELANOSARCOMA OF THE IRIS. (C. A. YOUNG)

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A CASE OF SARCOMA OF THE IRIS

BURTON CHANCE, M.D.

PHILADELPHIA

A small roundish mass on the iris, in existence at least twenty-seven years, had recently increased in size. The growth was yellowish-brown, but not strikingly pigmented. A bite of the iris including the growth was withdrawn by means of a blunt hook and capsule forceps, and excised leaving a broad coloboma. Microscopic study showed the tumor to be a mixed-cell sarcoma, and the eyeball was enucleated eighteen days after removal of the tumor. No tumor cells were found elsewhere in the eye, and no subsequent disturbance occurred. Read before the American Ophthalmological Society, April 30, 1928. (See also colored drawing in frontispiece to this issue.)

It may be conceded that sarcoma of the iris is one of the very rarest of eye diseases. It is years since a case of it was brought before this Society; and, in all my experience, I can recall only two cases—the one which is the subject of this brief report, the other seen in a boy under the care of Dr. Zentmayer, last year. I deem it proper that this case should now be placed on record because of the lapse of time since the patient was under treatment, as during these years he has regained the lost health, and more, which had been dependent upon his anxiety concerning the presence of a tumor within his eye.

On December 13, 1922, a gentleman of forty-two years, a practicing biological chemist, consulted me because for many years, to a certain extent of his knowledge at least twenty-seven, he had been aware of the presence on the surface of the iris of his left eye of a small roundish mass for which no cause could be assigned. The eye had never been injured nor inflamed; but shortly before he consulted me the mass had become quite perceptibly larger, and the sight of that eye was, so to speak, somewhat difficult to maintain.

He had fallen into a psychical despondency from having read that tumors of the eye are likely to become metastatic. He stated that he had consulted many, but by no two examiners had the diagnosis been pronounced alike. By one, it was called a "cyst;" by another, in 1908, "a chemical splotch;" by another, it was "deemed unworthy of anyone's consideration." Still another said "it was a 'terrible thing,' for which the eye should be enucleated without delay," yet thought, when informed that it had existed unchanged and without symptoms for twenty years, "it might remain undisturbed."

In my examination I made out at the lower extremity of the vertical meridian a yellowish-brown, amber-looking mass, more or less dome-shaped, which measured the depth of the chamber but was not pressing on the cornea, though it extended down into and occupied the angle of the chamber. It seemed to be attached to the iris in the mid-zone by a narrow base rather than enmeshed in the substance of the membrane. It was rather sharply outlined on its lateral circumference but more or less nodular on the anterior surface. The apex did not extend as high as to the pupillary border. The iris reacted as freely as that of the other eye, and on dilatation of the pupil by homatropine it was possible to see an irregularity or bulging of the uveal surface into the posterior chamber.

The mass was not transparent to such beams of light as I was able to employ, nor was it translucent like a

cyst. On the surface there were fine capillaries and vascular splotches, tiny pits and pale spots; and a yellowish-brown halo surrounded it. No signs of inflammation were to be seen in the eye; the fundus was healthy and the tension normal. V=6/6.

The right eye was entirely healthy; there were tiny pigment splotches on the surface of the iris, yet only such as one commonly notices on grayish irises.

On the next day further opportunity for positive study was afforded by sharp miosis produced by eserine, yet no new features could be made out. A corneal microscope and slit-lamp were not obtainable.

The family history was entirely negative; the patient's quite aged mother had had an ovarian cyst removed many years before.

The diagnosis of sarcoma was made and the patient advised of the malignancy of such a tumor, concerning both the ocular and the general systems, from which, should extension to the body take place, death itself might follow. Yet I placed before him the prospect of the maintenance of health either by removal of the growth alone, which, if the tumor were found to be of a benign nature, would favor the prognosis; or, if the cells were malignant, and the globe not yet invaded, then, upon excision of the globe it might be assumed that extension beyond the orbit had not occurred.

My opinion was expressed most frankly to the patient, and to his physician, Dr. J. Madison Taylor, but I suggested that they should consult Dr. W. C. Posey for an independent opinion, without comment from myself. Dr. Posey, too, regarded it as a case of sarcoma, though he stated to me later that up to that time he had never had a case of sarcoma of the iris.

The patient accordingly requested that I would first excise the mass, and if, after study of it, sarcoma cells were found, then I should remove the globe without delay.

On December 18, five days later, with Dr. Posey assisting me, the mass was excised including a rather wide area of the iris. It was a somewhat difficult procedure. First an angular keratome was employed to avoid a wounding of the mass. The incision at the lower limbus was then lengthened toward the temporal side with a Beer's knife, and with De Wecker's scissors the nasal extremity. At the first attempt with capsule forceps the mass was lacerated so that free hemorrhage followed. Then, with a blunt hook and capsule forceps a grasp of the iris with the mass included was gently effected, and these tissues were withdrawn and then excised; a broad coloboma resulting.

Considerable reaction followed, owing to the formation of cataract from laceration of the capsule in the manipulations.

On the third day the wound had healed, displaying a good clean-cut coloboma in the midst of which was the swollen lens. On the fourth day, incising at the superior limbus, I performed peripheral extraction of the cataract.

The mass was immediately entrusted to Dr. P. De Long, who, on January 3, 1923, reported that the tumor was a mixed-celled sarcoma; the sections being composed of iris stroma with enlarged blood vessel walls, altered chromatophores, and, imbedded in a fibrillar substance, closely-packed innumerable round and spindle-shaped cells, in the midst of which was a scanty amount of melanotic pigment.

On January 5th, eighteen days after removal of the tumor, the globe was enucleated by clean dissection under local anesthesia without accident, the nerve being severed about four mm. behind the globe. After this an uneventful recovery took place and in a week the socket had entirely healed, so that on the eighth day from the enucleation the patient returned to his home. The prosthesis was inserted on February 3rd and the patient was kept under observation for ten days longer, in which time all went well.

A thorough search through several sections of the excised globe failed to

find tumor cells in uvea or nerve; the pillars of the coloboma exhibited sound tissue.

In the following June the gentleman returned for a general inspection. A good result had been attained, the orbital tissues being perfectly healthy. All had gone favorably. The quite natural-looking glass shells caused no discomfort and could be inserted and removed easily. Following the operation there persisted for several weeks a singular sweating of the left side of the face and forehead.

I have not seen the patient since. In his frequent letters to me he has had nothing of moment to report, for all has gone well with him, and he has gained in weight.

In this case the great length of time passed in what might be spoken of as the "first stage of development of an intraocular growth" is of especial note. In the clinical aspect there was but a single deposit, and the ciliary body was unaffected; and there was no interference with the iris reactions, as the iris was not swollen nor muddy, and full expansion of the pupil followed the use of mild mydriatic solutions, as did contraction from eserine. There were no clinical signs of rapid progress, and by the microscope one did not discover any such signs in the tissues, for these were not markedly vascular, and the episcleral vessels in the region of the tumor site were not especially enlarged. To the unaided eye this tumor seemed to be but lightly pigmented, it was not like a melanoma when I saw it; it was, however, somewhat darker than the whitish leucosarcoma in Dr. Zentmayer's case. At no time in the patient's recollection had there been hemorrhage in the aqueous chamber. No pain had ever been experienced in the eye, and neither temporal nor frontal headache had ever been complained of.

The confusion of diagnoses in the earlier years might very well be accounted for by the indefinite characteristics of the tumor and the slow progress of its growth. So that, perhaps, what was in appearance only a harmless melanoma would have misled anyone. Therefore it is not my intention to criticize any of the statements made to the patient by those to whom he had gone in the years past. Today, biomicroscopy would have made it possible for one to diagnose the case immediately. Dr. Taylor, when given Wood and Pusey's monograph on "primary sarcoma of the iris," published in Knapp's Archives in 1902, returned it with the remark that he "had no idea there was so much peril in such innocent-looking conditions as had been present in his patient's eye in the previous five years".

The responsibility placed on the surgeon in a case like this is the greatest likely to arise in the course of one's practice. Simply to excise a tumor mass, having in mind that one expects to completely remove the tumor in its entirety, is to expose the patient to the danger of an actually incomplete removal of all the cells, with consequent irritation and cellular excitement leading to a new focal development or to a general extension throughout the body. On the other hand, to counsel the removal of an eye possessing full visual powers, from the person of a profitable member of society, whose life work is most praiseworthy, when his eye has been without any signs of inflammation or of subjective discomfort, is perhaps the most onerous duty laid on one. In my own case the task was all the more arduous owing to the patient's insistence that the enucleation should be performed under local anesthesia. It was of particular interest that the patient himself appreciated the importance of immediate radical treatment, and the result, manifest today, justifies such a procedure.

315 South Fifteenth street.

FREE CYST IN THE ANTERIOR CHAMBER

C. A. Clapp, M.D., F.A.C.S.
BALTIMORE

A dark oval body measuring 0.75 by 1 millimeter floated freely in the anterior chamber, resting at the lower angle when the head was vertical. The eye was otherwise normal, and had normal vision. The surface of the cyst was unevenly covered by pigment granules. The review of the literature includes summaries of the cases reported since 1912. Read before the American Ophthalmological Society, April 30, 1928. (See also colored drawing in frontispiece to this issue.)

In 1867 Businelli[1] described a case of free cyst in the anterior chamber. This seems to be the first mention of the condition in the literature. In 1912 Coats[2] reported a case and reviewed the literature. He was able to find but ten cases prior to his report. Since 1912 I have been able to find six case reports, which brings the number to eighteen including the present case.

The family history is of little importance. However, Apetz'[3] case gave a history that the patient's mother and grandmother had had similar spots in the eye, although the actual condition was not verified by examination. The past history is also usually unimportant, although Meller[4] in his report stated that one patient had received a blow on the eye and another had had a phlyctenule before the cyst was noticed. The most frequent history is of accidental discovery in the eye of a dark spot which is usually mistaken for a foreign body.

Usually the cyst is singular in number and is present only in one eye, but Schneider's[5] case showed a cyst in each anterior chamber, and Spicer's[6] case eventually showed seven cysts floating like "toy balloons" in the aqueous. This eye developed a ciliary staphyloma and secondary glaucoma and was removed.

Free cysts in the anterior chamber are most frequently seen in youths or young adults, but they may occur in children, as in Spicer's case just mentioned, or in the aged, as in Stevenson's[7] case of a cyst found in a woman of sixty-seven years; although it is doubtful whether the latter case should be classed in this group. Evidences of developmental arrest are frequently seen, particularly in the form of persistent pupillary membrane, although this condition does not occur in the majority of the cases.

Theories as to mechanism of production: Businelli[1] and Apetz[3] believe that these cysts are the products of developmental arrest and possibly closely associated with pupillary membranes.

Fuchs[8] and Bock[9], on the other hand, think they are produced by excrescences of pigment epithelium at the pupillary margin or perhaps from the posterior surface of the iris.

Greeves studied Spicer's[6] case microscopically and concluded that in it the cysts were developed from embryonic retinal tissue from the pars ciliaris, and that their contents were vitreous.

Pathological anatomy: Meller[4] studied two cases with the microscope, and in each he found a delicate connective tissue wall with numerous pigment granules on the outer surface. The contents of the cysts was a gelatinous mass. Mr. Greeves states that in Mr. Spicer's[6] case the walls of the cysts resembled glioma tissue. As previously mentioned, he states that the cysts contained vitreous, but unless there is further elucidation as to how he arrived at such a conclusion, whether by chemical analysis or microscopical appearance, I believe this statement should not be finally accepted.

Treatment: Possibly a few cases may require surgical removal because of increased intraocular pressure or because of enlargement of the cyst. Certainly by far the greater number produce no inconvenience and cause no organic change in the eye involved.

Case history: Mr. N., aged twenty-one years. December 12, 1927. Family history negative. Past history negative as to eyes.

Two months ago, while at work, patient got a considerable amount of dirt in his eyes and was treated by a first aid man. On his return home the eyes felt scratchy, and upon looking into the mirror he noticed something in his right eye which he took for a foreign body. As this spot persisted the patient was sent for examination.

External examination: Conjunctiva normal. Extraocular movements normal. Finger tension normal. Pupils normal in size, react to light and accommodation. Vision 20/20 plus in each eye. Fields normal in outlines. In the anterior chamber of the right eye there is seen a dark, freely movable, oval body measuring 0.75 by 1 millimeter. Its normal position is in the region of seven o'clock, but if the patient is placed upon his face, the cyst immediately falls to the center of the cornea.

Slit lamp: The surface of the cyst is unevenly covered by pigment granules on a delicate basement membrane. The interior is filled with a clear substance.

Ophthalmoscope: Media clear. Outlines of nerve distinct. Normal physiological cup. No vascular changes. No evidences of pupillary membrane or synechia.

Brief summaries of the **cases reported since 1912** follow:

(1914) Spicer[6]: White spot on edge of pupil at three months of age. At sixteen months three opaque finger-shaped masses projected into the anterior chamber. At four years of age these had disappeared, and a cyst four millimeters in diameter was present in the anterior chamber. Six other cysts later appeared, and were followed by secondary glaucoma and ciliary staphyloma, and the eye was removed.

(1919) Stevenson, E.[7]: Female aged sixty-seven years. Dark patch back of the iris. Tension normal. Vision 6/9 with correction. When head is bent forward a brownish mass appears at lower pupillary margin and slips down into anterior chamber. When the head is again held erect the oily mass slips back through the pupil to behind the iris.

(1919) Zentmayer[10]: A cyst measuring 4.5 by 3.5 millimeters fills the anterior chamber. The author does not state in the report whether the cyst was free or attached to the iris.

(1923) Jänner[11]: Male aged twenty-two years. Right eye. The object was taken for a foreign body. This mass was covered with brownish pigment and was freely movable.

(1923) Stajduhar[12]: Male aged twenty-four years. Right eye. The cyst appeared at 6:30 to 7 o'clock position. It was covered with dark brown pigment and was 2 by 1.5 millimeters in diameter. The eye was otherwise normal.

(1926) Holloway[13]: Female aged forty-three years. Right eye. Oval brown cyst 1.5 by 3.5 millimeters in diameter, immediately downward, free, and floating. No evidences of pupillary membrane were present.

Spicer's[6] case is probably of different origin from the one presented, but still must be classed as a free cyst of the anterior chamber. Stevenson's[7] case apparently is in a class by itself, and from the published report it is difficult to classify Zentmayer's[10]. The cases reported by Jänner[11], Stajduhar[12], and Holloway[13] are certainly of the same type as here reported.

513 North Charles street.

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PRIMARY MELANOSARCOMA OF THE IRIS
With report of case

CHARLES A. YOUNG, M.D.
ROANOKE, VIRGINIA

The literature of the subject is reviewed. The author's own patient was a man of thirty years. A brownish tumor almost filled the anterior chamber, strikingly simulating the appearance of a dislocated lens. The presence of the tumor had been noticed by the patient for eight years. There has been no recurrence for two years after enucleation. (See also colored drawing in frontispiece to this issue.)

Primary melanosarcoma of the iris is relatively rare, occurring most frequently between the ages of forty and sixty years, although it may be found any time after the second year of life. It is especially characterized by slow growth and the late appearance of inflammatory symptoms.

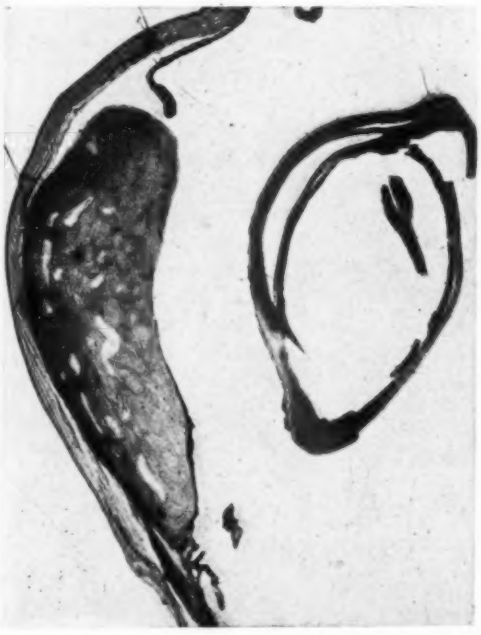
The differential diagnosis may be difficult. It is necessary to exclude syphilis, tuberculosis, granulation tumor surrounding a foreign body, cystic growth of the iris, and melanoma. Biomicroscopy is an important aid since the absence of inflammatory signs, particularly cells in the anterior chamber, will exclude growths of inflammatory origin. In the early stages it is probably impossible to distinguish a melanoma from a sarcoma without examination of microscopic sections.

Li[1], in his article on ring sarcoma of the iris, reported that among the total number of 457,141 ophthalmic patients treated in the Outpatient Department of the Massachusetts Charitable Eye and Ear Infirmary during the past twenty-three years (from 1900 to 1922) there had been 154 cases of tumor of the uveal tract examined microscopically, of which only six were cases of tumor of the iris, namely: one case each of mesoblastic leiomyoma, metastic carcinoma, angioma, cholesteatoma (pearl cyst), and melanotic ring sarcoma, and one of probably epiblastic leiomyoma. During the same period of time, 140 cases of sarcoma, three cases of angioma, and five cases of metastatic carcinoma of the choroid were examined.

Roemer[2] states that only one case of sarcoma of the uvea is met with in two thousand patients with eye disease, and that it may start in the iris, ciliary body or choroid, but least often in the iris. He also remarks that sarcoma of the iris is apt to start from nevus or melanoma.

Friedenwald[3], reporting a case of primary sarcoma of the iris of the so-called leucosarcomatous type, quotes Laven[4] to the effect that about 130 cases were on record in 1913 and that statistical consideration of thirteen cases of primary iris sarcoma described in the literature indicated a relative benignity

of this class of growth, at least as regards length of life, although with a marked tendency to recurrence or metastasis. After excision by way of iridectomy, there were five cases of relapse in the eyeball. Two of these remained free from further relapse after enucleation, and one after multiple cauterization. In one case enucleation was done eleven years after excision of the tumor, and death followed six years later from general metastasis. Orbital metastases occurred in two cases after enucleation.



Primary melanosarcoma of the iris (Young).

Groenouw[5] described the left eye of a man aged forty-one years, that presented at the lower temporal angle a brown tumor of the iris, six mm. long and three mm. wide without other changes in the iris. Vision was reduced to perception of light. The patient had noticed the tumor twenty-two years before, when it had had exactly the same dimensions, according to the records of the ophthalmic surgeon, and corrected vision of six-fifths. It could not be ascertained whether the tumor had existed even longer, perhaps from birth. It had caused no disturbance until five years before, when the eye had gradually grown blind without inflammatory symptoms. Groenouw considered it either as a very slowly growing melanosarcoma or as a melanoma existing for twenty years which had become sarcomatous within the last few years.

Iridectomy would probably suffice in many of the cases, with preservation of useful vision, although enucleation of the eyeball is given preference by various authors, as sometimes, besides the original tumor, metastatic nodules in the iris remain after iridectomy and cause relapses.

Narog's[6] case of perivascular leucosarcoma of the iris is the first one in the literature in which such a tumor is reported to have caused phthisis bulbi. He first saw the patient, a one-year old infant, in the stage of secondary glaucoma, a small vascular tumor being seen in the lower part of the iris. One year later the eye was painful, soft, and shrunken, and it was enucleated. The anterior chamber was filled with necrotic tumor tissue. Some visible cells were present around the vessel. The retina and choroid were infiltrated with tumor cells, while the detached retina was entirely free of involvement. While the late picture resembled glioma, this could be excluded, according to the author, by the early nodule seen in the iris, and the fact that the main site of the tumor was here, the posterior segment, including nerve and retina, being free. The morphology of the cells also aided the differential diagnosis.

Case report: Mr. F. H. White, aged thirty years, first seen April 6, 1926, on account of poor vision and pain in the left eye. The patient gave a history of having been hit in the left eye in 1917 with a bunch of keys, but had not noticed any trouble until 1918, at which time there was a small growth about two mm. in diameter at the three o'clock position in the region of the limbus. Discharged from the U. S. Army, February 3, 1919, with ninety per cent vision.

Examined July 1, 1920, by Dr. Emory Hill, who reported vision O. D.

6/6, O. S. 6/9, and that the left eye showed a brown tumor with many blood vessels in its surface on the temporal side of the anterior chamber, extending from the two thirty o'clock to the five o'clock position at the limbus and to the temporal border of a three mm. pupil. Dr. Hill advised removal of the tumor and the use of radium.

Examined by Dr. R. G. Reese, October, 1920. Dr. Reese was of the opinion that the tumor was a pearl cyst of the iris, although somewhat suspicious of sarcoma.

Examination April 6, 1926. Vision O. D. 6/6, O. S. (with eye shaded and looking through fingers) 6/21. O. D. negative, O. S. shows a brownish tumor which almost completely fills the anterior chamber. Only a crescent-shaped portion of iris can be seen nasally. When, in semi-darkness, a small portion of the pupil can be seen up and in, the tumor gives the striking appearance of a dislocated lens in the anterior chamber. A good deal of pigment can be seen on and in the tumor.

The globe shows no inflammation, cornea clear, iris reacts to light, to accommodation, convergence, and consensually. Tension (McLean) fifty mm.

May, 1926, patient seen by Drs. de Schweinitz, Zentmayer, and Koeppe, all of whom advised enucleation and were of the opinion that the tumor was malignant in character.

Enucleation of O. S. June 10, 1926, at Roanoke Hospital under ether anesthesia. Present condition August 15, 1928, shows no signs of recurrence or metastasis.

Pathological examination of the eye made by Dr. Perce De Long, who reports the following: spindle-shaped melanotic sarcoma, arising from the iris, lies on the posterior surface of the cornea, and the ciliary body is not involved.

Conclusions: 1. The presence of a growing tumor in the iris over a period of years (eight years in the present case) does not rule out sarcoma.

2. Enucleation is the safest procedure in treating sarcoma of the iris.

3. Self-cure by development of phthisis bulbi is not to be expected, although one such case is on record.

517 Shenandoah Life building.

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SURGICAL TECHNIQUE FOR THE REMOVAL OF SUBRETINAL CYSTICERCUS

RAFAEL SILVA, M.D.
MEXICO CITY, MEXICO

Translated by Walter L. Garnett, M.D., F.A.C.S.

Three significant cases are reported. In the first, a large subretinal cysticercus occupied the macular region, extending to the optic nerve. The external rectus was temporarily detached at its insertion, and the sclera cautiously incised layer by layer until herniation of the choroid was produced. By careful manipulation, and in spite of the presence of a considerable amount of fibrous tissue, the cysticercus was expelled without rupturing the sac. In the second case there was definite evidence that the cysticercus had migrated from one position to another beneath the retina. The cysticercus was evacuated through a scleral incision of moderate length, and normal central vision was retained. In the third case the cysticercus was in the vitreous. Following death of the cysticercus, a violent iridocyclitis developed, and enucleation became necessary, although this might have been avoided if the patient had accepted earlier intervention. The pathology of the subject is discussed in detail. Read before the Congreso Nacional de Medicina, Monterey, Mexico, December, 1927.

There are few ocular ailments of so great clinical interest, or which test so critically the surgical skill of the ophthalmic surgeon, as the occasional cases of intraocular cysticercus, especially those which are found in the posterior segment of the eye. I have already published my personal experiences of those in the vitreous (National Academy of Medicine of Mexico and Ophthalmological Society of Paris, 1925). The present study is devoted to subretinal cysticercus.

Case one: I shall first consider a recent case of subretinal cysticercus which merits special mention. The patient, Miss G. V., thirty-seven years of age, from Toluca, Mexico, came to my private office at the end of September, 1927, complaining of loss of vision in the right eye due in the opinion of a medical specialist to an internal derangement of the eye. The previous consultant had subjected her to a series of subconjunctival injections, giving one every other day for a period of five weeks, without improvement.

The affection had started in November, 1926, that is ten months previously, at which time she had begun to notice in the affected eye some loss of vision, which increased daily, without pain. A short while before she came under my observation she had noticed slight deviation outward of the right eye. She did not know whether this was constant or not, but she said at this time that she could scarcely perceive light with the affected eye. Moreover she had for some time had frequent headaches, digestive upsets, irregular and not severe, and some dizziness. Following medical treatment she passed a tapeworm, with the result that these general symptoms disappeared. The blood examination showed a high eosinophilia.

On examining the eye I found the anterior segment normal: the conjunctiva and cornea intact, even when examined with the slit-lamp; the iris normal, but the pupil a little larger than that of the opposite side, reacting consensually but without response to direct light. The crystalline lens showed slight opacity at the posterior pole when examined with the plane mirror. This was confirmed by the corneal microscope, which permitted the observation of all details of both embryonal and adult nucleus. The following data gave reason to suppose that the eye was extensively involved: lack of reaction to direct light; failure to provoke consensual reaction of the other eye; outward deviation; and beginning cataract at the posterior pole, indicating a seriously disturbed nutrition of the organ, though the normal tension was conserved.

With this impression I examined the media with the plane mirror, and found a whitish fundus in place of the normal aspect. I further discovered that

I was not able to locate the papilla and that its site could only be suspected by the division of the blood-vessels at a central point. It could not even be determined that the ramifications corresponded to normal vascular branches, as they appeared and disappeared frequently in their course, but thanks to the relative integrity of the vitreous it was seen that the arteries and veins ran over the surface of the whitish membrane. I concluded that the retina was completely detached.

On the nasal side of the fundus was seen a semicircular bulging with pronounced margins, but without changes in color. The rest of the bulging was gradually lost in the folds of the fundus on this side, also above and below. The folds were easily appreciated by the windings of the retinal vessels, all much darker than normal, without light reflection. Sometimes it was difficult to distinguish a vein from an artery when the vessels were isolated and of small caliber. Nevertheless I could determine that the vessels were not newly formed. The outlines of the retinal folds were somewhat blurred, and they were observed to have some passive movement on rotating the eye, suggesting the presence of liquid behind the retina.

To the temporal side from the division of the central vessels a spheroidal bulging was perceived, bluish gray in color, extending posteriorly to the optic nerve, its central portion corresponding to the horizontal meridian of the eye. Its upper part was definitely bounded by a curved line with distinct rainbow hues above, behind, and in front. Its lower part, which blended into the rest of the picture of detached retina, was indefinite. A little below the center of the bulging a spot was observed equal to somewhat more than one disc diameter of the other eye, reddish yellow in color, and paler at its center, where independent movements and movements associated with the bulging previously described were observed. These corresponded to the vessels and scolex of a cysticercus, which showed clearly and distinctly movements of expansion. On the surface corresponding to the vesicle there were some spots of atrophy of the retina, recognizable by their dirty gray color. But the rest of the retinal area involved permitted the observation of a part of the vesicle and its contents perfectly. The eye was clearly transilluminable and vision was qualitative.

On examination with the large ophthalmoscope of Gullstrand I corroborated the above details and in addition observed that the expansive movements of the rainbow-hued borders and the nasal and temporal limitations of the mass were very clear. The view of the parasite was highly interesting. Behind the retina and in the region of the vesicle small round gray spots were found, which if seen in the vitreous I should consider of marked diagnostic value. During the numerous observations made on the patient I was able to study the head of the scolex and its suckers with as much clearness as is represented in the atlas of Jaeger (figure 83, on plate 80). The diagnosis was undoubtedly a large subretinal cysticercus in the region of the macula, reaching to the optic nerve. Extraction of the animal was urgently indicated, not for restoration of the vision lost for at least a year by complete detachment of the retina, but in order to avoid atrophy of the eyeball and its complete loss by death of the animal. This accident happened in a case which I shall mention later. Certainly, had I been dealing with a man instead of a woman, I should have recommended evisceration of the eye, but for cosmetic reasons my patient begged me at all cost to conserve the eye by extracting the parasite.

The incision should be meridional and about eight millimeters in length. The preferable meridian for the incision was determined to be a little below the horizontal. The horizontal meridian corresponded more or less to the center of the vesicle but was impracticable because of the presence of the long ciliary vessels. It is very difficult to establish on the meridian selected the distance from the cornea

which would serve as the point for starting the incision, because exact localization of the parasite would be required. It was urgent to localize not only the posterior or papillary border, which reached close to the papilla, but the anterior or ciliary border, which was of even greater importance.

We must remember that there was an external strabismus of ten degrees, and as there was no central vision I measured the anterior border of the vesicle in the horizontal diameter with the Skeel-Wooton perimeter, fixing with the sound eye along the quadrant and subtracting from the result the ten degrees of strabismus. In order to check the results for greater accuracy (disregarding the angle kappa from a practical point of view), the perimeter used included a tube which permitted an assistant controlling it to keep constantly on the center of the pupil. This tube has a narrow groove which permits a view of the interior of the examined eye, and which corresponds to a very narrow graduated quadrant by which any point on its course can be measured. The apparatus is provided with another vertical disc mounted on the observation tube, which registers the variations of the quadrant in relation to the horizontal plane. We were able to determine the anterior point, at sixty degrees, corresponding to a point sixteen millimeters from the external border of the cornea, according to Lenz. The incision had to begin in the neighborhood of this point in order that in its course toward the posterior pole of the eye it might reach accurately the largest part of the sac of the cysticercus.

The **operation** proceeded as follows: First anesthetising the conjunctival sac with cocaine and disinfecting the eyelids and conjunctiva according to the strict rules of asepsis, a general anesthetic (ether) was administered . The conjunctiva was elevated by a vertical incision a little forward from the insertion of the external rectus, and a horizontal incision sufficiently extensive, a little above the superior border of the same muscle, the point of intersection of the two incisions being fixed with a silk suture, for future reference.

On reaching the rectus insertion the tendon was detached and picked up with a Prince clamp, together with the conjunctiva and the capsule. Two sutures were carried twice through all of these tissues, forming a loop to serve for traction during the rest of the intervention and to be utilized subsequently for reattachment of the muscle. The muscle was cut, leaving a good stump, very useful not only for final reimplantation but also for fixing the eye and effecting the necessary rotation of the eyeball.

The muscle having been completely elevated and the sclera exposed, an incision of seven or eight millimeters was made layer by layer in the latter. This incision was carried to sufficient depth just to cause herniation of the choroid, over which a few drops of adrenalin were applied. The vascular coat was opened with great care, and a large quantity of liquid immediately escaped, leaving the eye markedly hypotonic.

Even though the vesicle could now be seen, it gave no sign of escaping, thanks to a sort of a shell of connective tissue which made it adherent to the choroid and retina. I did not dare to cut it freely, for fear of opening the vesicle, an accident which might allow the scolex to remain. Even pulling the vesicle with forceps might do this and so allow the reproduction of another sac, which would mean failure. (This accident happened to a very able colleague in a case of subretinal cysticercus with perforation of the retina by the scolex, maneuvers aimed at extraction having ruptured the sac, so that from the scolex a free cysticercus developed later in the vitreous.

I very carefully broke the envelope of the animal, and much to my sorrow the cysticercus remained immovable, although I had carefully separated the margins of the wound with two Stevens hooks. Here the dramatic act began: expulsion was delayed in spite of everything, and I now began to fear that I should have to play the last card

and extract the animal by force, the application of a cataract spoon being insufficient to completely detach it. The internal pressure was lacking which in recent cases by expulsion of the subretinal liquid facilitates delivery of the animal. In old cases like the present one the cysticercus is held in situ by the adhesions, and by the hypotony consequent on rapid evacuation of the subretinal liquid.

At length success crowned the undertaking, and an enormous cysticercus was expelled which measured fourteen millimeters expanded and twelve millimeters when contracted—the largest parasite I have ever extracted from the eye. Suture of the scleral margins, reimplantation of the muscle, and suturing the conjunctiva completed the operation, without appreciable hemorrhage ex vacuo but with marked hypotony.

Convalescence was uneventful. There was no pain and no inflammatory reaction, and the patient was discharged after ten days, the perception of light, good tension, normal movements, and only slightly accentuated opacity of the crystalline lens. The eye remained without inflammatory reaction, and the strabismus was corrected. Observed one year later, the eye remains definitely without mutilation. Without surgical intervention the loss of the eyeball would undoubtedly have occurred.

It will be observed that this operation was very dramatic and carried with it important lessons.

Case two: Another case of subretinal cysticercus, which I operated on several years ago (1920) in the Hospital de la Luz, and which was observed by Dr. Graue, was the only one I have ever observed of migration of the cysticercus from one place to another; abandoning its primary sac. The subretinal cysticercus was at first located below and external to the macula, where it had left a dirty grayish sac measuring two and a half disc diameters. From that place there began a kind of tunnel about three disc diameters long, extending to a point near the equator, in the inferior external quadrant of the eye.

The image was clear, because of absolute integrity of the media. The first sac was evidenced by completely localized discoid bulging of the change of direction of the retinal vessels and by clear margins without rainbow hues or movement. From this first bulging extended an almost meridional tunnel which ended in another sac, larger, bluish gray, of roundish contour, clearly rainbow-hued, and with a whitish spot in the center, slightly yellowish from the presence of the larva and with movements of expansion quite evident. In general the mass was dumbbell-shaped, the two vesicles connected by the tunnel.

Having previously exactly located the parasite by the Hirschberg method of examination of scotoma of the visual field, I operated on this case under cocaine with a relatively small meridional incision, about five millimeters long, and barely opening the sclerotic and choroid coats by transfixion. The cysticercus, six millimeters in length, delivered itself. Not the slightest complication followed, and the eye was completely conserved, with normal central vision. Some days later a little hemorrhage was observed by the ophthalmoscope in the place which corresponded to the site of the cysticercus and along the tunnel, but without reaching the site of the primary sac. Later the hemorrhage was resorbed and there remained some spots of retinochoroiditis, cicatricial traces of the healing process.

Let us consider the order of the cystoides. According to Brumpt, in the adult state these are plathelminthic parasites of the form of a tape, always segmented, lacking a digestive tube, but provided with organs of fixation (suckers and hooklets in one extremity). Their habits in the adult state is the digestive tract, but in the larval form they localize in diverse parts of the organism. They are divided into two suborders: cyclophyllidea and pseudophyllidea. The first have four suckers and lateral genital orifices. The

second suborder is characterized by two bothridious and median ventral genital orifices. The formation of alternate genital pores and continuous uterus distinguish the genus Taenia.

The fecundated taenia in the intestine produces eggs which fill the uterus of the worm, distending it until it bursts, liberating the eggs in the patient's intestinal tract. At the moment when the cystoid eggs are liberated, they are generally found covered with a globular mass, provided with six hooklets covered by a membrane directly over the embryo, which is now found inside. This ovum may follow two paths: it may be expelled from the intestinal tract, or by a retrograde course it may arrive at the cavity of the stomach.

In the latter case its evolution continues until it arrives in the stomach of the intermediary host (generally the hog), where under the action of the gastric juices the covering membrane is dissolved. The embryo perforates the wall of the digestive tube by means of its hooklets, and arrives by way of the blood stream or lymphatics at its ultimate resting place, where it undergoes a series of transformations.

The embryo, which measures twenty microns in diameter, loses its hooklets and grows a head which three or four months later constitutes the mature cysticercus. This is enclosed in a cystic sac in the interior of which is seen a white opaque point, like a grain of rice; the head being invaginated or evaginated. The cysticercus thus constituted is localized in various parts of the hog, but especially in the muscular tissues, with a predilection for the sublingual region. The cysticercus being swallowed by the definite host in the contaminated meat, the scolex liberated by the digestive juice arrives at the intestine, where it develops later into an adult taenia which is susceptible of fecundation, thereby repeating the circle just indicated.

Generally there are only few taenias in the same individual, though there may be found twenty-two to fifty-nine in one individual by simultaneous and multiple infections. In the present case the patient had the Taenia solium as well as its larva, the cysticercus, being the definite host and the intermediary at the same time. Mme. Volouats has found coexistence of the intestinal taenia twenty-seven times in 248 cases of ocular cysticercosis.

This slight digression allows us to understand and interpret satisfactorily our observations. Subretinal cysticercus, beside the retina as recognized by its vessels, is surrounded by an envelope of inflammatory connective tissue (the thicker, the older the animal). In our case this was so pronounced as to form a serious hindrance to expulsion. Naturally its hooklets are invisible, and only the head shines through, wider than the neck, with the bulging of the suckers and, above all, the movements when the larva is evaginated. This is not always the case, and it is not infrequently observed that the vesicle is invaginated, revealing in one part a yellowish body in the form of a grain of rice, paler in the center which corresponds to the animal itself.

In the extension of the vesicle and round about are observed some dirty gray spots, roundish and numerous, as in cysticercus of the vitreous, which I consider characteristic and probably due to the suction of the parasite or perhaps to its excretory or secretory products. These spots should always be looked for with great care, because of their diagnostic importance. A similar image is found in cysticercus of the vitreous, when it has become adherent and begins to cover itself with its reactional envelope. But in these old cases the vitreous is not clear in its entire extent; there are no blood vessels over the tumor, and there are movements of expansion and still some changes of position, if fixation is not complete, the cyst jumping as if moved by a spring.

In young subretinal cysticercus the integrity of the fundus is remarkable, permitting one to see clearly, over the tumor, the course of the retinal vessels. In old cases, as in the first one in our study, I was even able to see clearly

behind the retina somewhat more than the upper half of the vesicle, the rainbow hue of the borders, the presence of the animal itself, and even the movements of the head and those of expansion: there were no newly formed vessels, and, most important of all, transillumination of the ocular fundus was very easy.

Was the internal hemispherical bulging an old vesicle? Was it the starting point of migration of the cysticercus around the optic nerve, provoking complete detachment of the retina? It is difficult to decide definitely, since the patient had already had defective vision for a year. We really do not know when the affection started, but it is natural to suppose that the presence of the parasite in the eye dated a long time back since it had produced such defects as deviation of the eye, complete detachment of the retina, and posterior polar cataract, which are only found in the old cases of ocular involvement.

The localization of the cysticercus was extremely important and very difficult. The Donders method of examining the visual field could not be employed because the eye was without sight; neither could that of Schmidt-Rimpler utilizing the diameter of the papilla as a unit of measure; and I was obliged to use the method of Graefe, but reversed: that is, in place of having to fix the patient's eye along the graduated quadrant and the eye of the observer in the center of the perimeter, I had to fix the patient's eye along the center of the perimeter and illuminate along the graduated quadrant. I was able to fix the anterior limit of the vesicle at sixty degrees, which, according to the tables of Lenz, in turn corresponded to a point on the sclera sixteen millimeters distant from the temporal border of the cornea.

The second case is interesting, because it is the only time that I have been able to observe, without the slightest doubt, the migration of the vesicle to another place, as revealed by the tunnel that had formed between the retinal and choroidal coats and its later redevelopment with complete clinical characteristics. It is also interesting because of the ultimate conservation of central vision. The patient complained of tiring on reading, and the vision was a little cloudy. The vision was eight-tenths before the operation and ten-tenths after the operation. I was never able to determine any change manifested in the vitreous. Here I ventured to make the incision by transfixion, as recommended by Peschel, Arlt, and Treitel. But the first case in which I was certain that strong adhesions of the cysticercus existed I preferred the layer by layer incision, for fear of breaking the vesicle itself, as explained previously, even though this had the disadvantage of favoring leakage of the subretinal fluid, rendering difficult the expulsion of the parasite.

Y. Vosgien observed over 807 cases, 46 per cent being of cysticercus localized in the eye and its surrounding; 40.9 per cent in the nervous system; 6.3 per cent in the skin and cellular tissues; 3.47 per cent in the muscles; and 3.22 per cent in other organs. Of the 372 cases of ocular cysticercus there were 120 cases in the retina; 112 in the vitreous body; 84 in the conjunctiva; 26 in the anterior chamber; 19 in the orbit; and the rest in the cornea, iris, crystalline lens, choroid, and capsule of Tenon.

The parasites cause an irritative and inflammatory reaction, a mechanical reaction, and a weak toxic reaction; the latter leading to a general eosinophilia of important diagnostic value and a local eosinophilia in the adventitious membrane of the cysticercus. If in addition to the great frequency of subretinal cysticercus it is remembered that some of those found in the vitreous have previously been subretinal, later passing through the membrane, one can understand the enormous interest awakened by the study of this parasitic localization in the eye.

Graefe is certain that the parasite can live from two to four years; Saemisch was able to follow one for ten years; Zultzer describes the case of a

servant who showed signs of a cysticercus for a period of twenty years. Saemisch relates that in 1865 he saw in the operating rooms of a colleague in Paris a patient who for many years had exhibited lesions produced by a cysticercus to students who gave him fifty centimes for each examination. Berger has described a case of cysticercus of both eyes, and Hirschberg one of recurrence in the eye after removal of a previous one by operation.

In my practice I have observed that those in the anterior segment are generally easy to extract and have a benign prognosis, but the same does not hold with regard to those of the deeper segment, where the prognosis is grave because of the uncertainty of the outcome and because of irreparable lesions due to the cysticercus, which oblige the surgeon at times to content himself with preservation of the eyeball, although the vision cannot be conserved, as in cases of subretinal cysticercus with marked and extensive alterations in such an important area as the macula.

I have clearly seen a cysticercus of the vitreous for a period of ten years, in a Spanish painter in the church of Guadalupe. This, my first diagnosis of intraocular cysticercus, was twenty-five years ago. The patient refused intervention, and even to the present time he has an atrophic eye, painful and irritated, but which does not prevent his doing his customary work. For ten years the parasite could be seen without difficulty and was remarkably tolerated by the tissues of the eye.

The symptomatology of the cysticercus is always insidious, the most obvious being that related to the macula. Here the parasite shines through with a very peculiar reddish yellow tinge. Twice I have seen an intraocular cysticercus accidentally discovered as a surprise after enucleation. The first instance was in a child of four years with an inflamed amaurotic "cat's eye", with total detachment of the retina, and iridocyclitis. The second case was in the Hospital de la Luz, in a patient operated on for iridocyclitis, the eye being softened, blind, and severely painful, so as to demand enucleation.

Left to themselves these eyes with cysticercus have a fatal ending by more or less violent iridocyclitis which leads to atrophy and loss of the eye. Exceptionally, sympathetic ophthalmia has occurred after the parasite has been carried in the eye for forty years. Usually only one is present, but two or three have been observed in the eye at the same time.

The diagnosis is very difficult when the elevation presents sharp outlines and is surrounded by retina, but without the rainbow hue of the margins and the characteristic movements, because the case might be one of a dead cysticercus or of the sac abandoned by the migration of the parasite as has been described in the literature, as I personally saw in case number two.

Lagrange describes the inflammatory reactional phenomena of the retina in cysticercus cases. He says that when the parasite occupies the macula the latter has a red apoplectiform aspect which may be confused with embolus of the central artery of the retina, and he decides the differential diagnosis by the degree of loss of vision—complete and immediate with embolus and gradual with scotoma in cysticercus. He also says that the detachment is somewhat peculiar, the retina is inflamed, thick, and vascularized by the inflammatory process which takes place around the sac and which extends to the retina, while simple detachment of the retina, that of the myopic eye or that due to a tumor, shows a white, colorless, and atrophic retina.

I cannot subscribe to the latter opinion, since I have never seen the apoplectiform phase of cysticercus of the macula even in recent cases. On the contrary, I have mentioned that even in very old cases, as in the first patient here referred to, I was able to see the greater part of the vesicle in detail, with thickening of the retina in its lower part. From this I am obliged to think that perhaps this condition is

found in the later stage of the affection, when complicated by the beginning phenomena of reaction.

In that very important work, the American Encyclopedia of Ophthalmology, fifteen cases of subretinal cysticercus are collected. The nonsurgical treatment given in these cases and also in those in the vitreous, though with little success, included male fern, electrolysis, and injections of corrosive sublimate. Many fear, as I do, that even though death of the animal is produced, the parasite can still act as a foreign body and produce later complications. The greater number of those who are experienced with this treatment declare themselves in favor of surgical intervention, employing the meridional incision exclusively.

Cirincione thinks that the cysticercus acts as an irritant to the retina and the optic nerve, forming a preretinal membrane which in contracting produces detachment of the retina. The small spots in front of the cysticercus (prevesicular spots) he considers favorable to extraction since he regards them as nests of subhyaloid cells which allow approach to the vesicle without opening the hyaloid membrane. But these spots are also found in subretinal cysticercus, so that one cannot confirm the prognostic value which Cirincione attributes to them when found in the vitreous.

He studied the pathology of the cysticercus, finding the usual inflammatory reaction with formation of granulation tissue, giant cells, eosinophiles and plasma cells. Wittich studied an eye enucleated at the very beginning of the affection, which made the study very interesting. He found a large number of eosinophiles in the conjunctiva, in the capsule and in the tissue in the immediate vicinity of the parasite.

Case three: I wish to relate incidentally another case which I have just observed, although it is not subretinal but in the vitreous. I think it is very important because of the lessons it teaches. Mrs. E. D. de R., of Mexico City, thirty years of age, married, presented herself in my office in January, 1926, complaining of pain from time to time in the right eye and some occasional blurring of vision, and having observed grotesque shapes in her field of vision. On examining the patient, I found the anterior segment intact and in the vitreous an entirely free cysticercus. The transparent media allowed one to determine the absolute integrity of the deep membranes of the eye without encountering any point of entrance from the retina. The patient was placed in a comfortable reclining position in order that measurements of the cysticercus in relation to the papillary diameter might be made. I found the taenia to be four papillary diameters in size.

Vision with the eye in repose was six-tenths. The patient was informed of the diagnosis and I clearly explained the gravity of the case and of the intervention which would be required. Treatment was declined because, among other reasons, she was four months pregnant and she did not wish to be subjected to the influence of a general anesthetic. I lost sight of the patient, and to my great surprise saw her five months later, suffering intense pains in the eye which had begun on the same day that puerperal infection had set in, following a difficult labor twenty-two days prior to her second visit to my office.

From the very beginning the pains were intolerable. The eye presented an iridocyclitis with pupillary seclusion and occlusion, chemosis of the conjunctiva and some limitation of the excursions of the eye. I diagnosed death of the cysticercus and proposed enucleation of the eye, which was promptly accepted. The specimen is in the laboratory of Dr. Perrin, who confirmed my clinical diagnosis of a dead cysticercus in the vitreous. In spite of the clinical violence of the affection, no evidence of suppuration was found. I expect later to amplify this study with investigations which are at present being made in Dr. Perrin's laboratory, and to publish the details in due time.

This case is very important because, contrary to what is generally observed, the duration of the affection was short and loss of the eye sudden, a risk which is generally forgotten in giving a prognosis of the evolution of intraocular cysticercosis. Among the explanations of the change of location of the cysticercus is that of de Vincentiis, who thinks that the sac, becoming more and more fibrous, contracts and kills the parasite if the latter cannot escape from it. This idea seems to be confirmed by his pupil Berardinis.

Lagrange admits the possibility of suppuration of the cysticercus due to endogenous infection. The last case related here seems to confirm this clinically; but we have seen that suppuration was absent. Most probably what happens is that the endogenous infection causes death of the animal, and its continued presence as a foreign body originates a violent inflammatory reaction with destruction of normal tissues and their transformation into fibrous neomembranes—a sort of cyst which nature tries to form in order to isolate the foreign element.

In this paper, I believe I have been able to demonstrate the following conclusions:

(1) The study of subretinal cysticercus is urgently necessary, not only because of its great frequency in certain parts of the world, but because it ultimately leads to cysticercus in the vitreous.

(2) Its symptomatology being very insidious, it is necessary to look for it carefully in order to find it at the earliest possible moment.

(3) The greater number of surgeons favor surgical intervention, since medical treatment is always inadequate.

(4) The meridional incision is best, especially when it is used after exact localization of the parasite, an indispensable condition.

(5) The prognosis depends not only on location (so much graver when the parasite is deeper and nearer the macula), but on timeliness of intervention. As is seen in the two cases I have presented, the difference in prognosis is very marked. Even when the success of surgical intervention is assured (taking into consideration the difficulties, which are much greater when the cysticercus is old and adherent), the final result, I repeat, depends naturally on the alterations sustained by the eye prior to intervention.

(6) Lastly, without resorting to the Krönlein operation, cysticercus at the macula can be extracted by detaching the external rectus, as I did, or by detaching the superior rectus as was done in an unusual case by my ever to be remembered teacher, Dr. Fernando Lopez.

Universidad Nacional de Mexico

TREATMENT OF RECURRENT PTERYGIUM

MEYER WIENER, M.D.
SAINT LOUIS

The author regards epithelial grafts as the only universally satisfactory means for the treatment of recurrent pterygium. The graft, as thin as possible, is taken from the inner side of the arm.

Pterygium is a peculiar triangular encroachment of the conjunctiva on to the cornea, either at the nasal side or both nasal and temporal. It is composed of fibrillary connective tissue covered with epithelium from the conjunctiva. The apex is usually blunt, rather than the sharp point with which it is generally described, and is irregular, usually sloping down and out. The advancing border is of a greyish color, and may be flat, or attain a thickness of one millimeter or more. This border is not vascular and is often covered by corneal epithelium.

In the tissue of the pterygium, newformed tubular glands are usually found as well as large spaces lined with epithelium. Cysts may be formed out of any of the glands or depressions, and often contain secretion and débris. Bowman's membrane, lying underneath the pterygium, is either completely destroyed, or is present only in fragments; the uppermost lamellæ of the cornea being replaced by pterygial tissue.

Homer[1] first advanced the theory that true pterygium always had its origin in a pinquecula. This was also established later by Fuchs[2] in his great work on pterygium, published in 1892.

Salzmann[3], in the 1926 Fuchs edition, assumes that since pinguecula and pterygium have the same or similar origins, pterygium is merely an advanced form of pinguecula.

Schöninger[4] found numerous little islets of afflicted cornea in advance of the grey pterygial margin, where tiny projections reach out beyond the edge and down into the cornea and into Bowman's membrane. He found leucocytes wandering through Bowman's membrane along the path of the opening of the nerve fiber canals, with a degeneration of the deep canal epithelium, but no variation of the surface epithelium. At the apex of the pterygium, where it was advancing, Bowman's membrane was intact. Only toward the base had it thinned or disappeared.

A pterygium may be stationary or progressive. It is the latter type with which we are chiefly concerned, although there are some authorities who think every pterygium is operative.

The operative measures vary greatly but may be summed up under six heads:

(1) excision, as advocated by Celsus[5] and Arlt[6].

(2) transplantation, advanced by Desmarres[7], McReynolds[8], and Knapp[9].

(3) cautery, supported by Coe[10] and Loring[11].

(4) galvanic, advised by Sharkey[12]

(5) splitting, devised by Ziegler[13].

(6) thermophore heat, suggested by Shahan[14].

Each one of these methods has been used and endorsed by various authorities and has been found generally successful when properly used. No one method has been found universally successful. Probably the procedure most generally in use, especially in this country, is McReynolds' modification of the Desmarres transplant, on account of its simplicity and general efficiency.

Since the upper layers of the cornea under the growth are destroyed and replaced by the latter, and since Schöninger[4] has demonstrated that the growth seems to progress by the dipping down and advancing of prolongations, and even islets, under the still intact superficial corneal epithelium beyond the grey border which seemingly limits the advance, the necessity of removing the entire thickness of

the growth, including a portion of the cornea in advance of the grey border, is obvious.

It is far better to include a layer of clear cornea underneath the pterygial growth than to leave tags. It is possible that these small portions left behind may tend to stimulate recurrence more than any other factor.

Recurrence will occasionally take place no matter what method is chosen, and notwithstanding the utmost care in dissection from the cornea and in other points of surgical technique. When a pterygium has once recurred, there is small chance of its permanent removal by any one of the usual procedures.

Hotz[15] was the first to advocate Thiersch epithelial grafts for recurrent pterygium. Klein[16] had previously recommended a mucous graft to replace the conjunctiva, where there was a large conjunctival defect, but not for recurrence.

Gifford[17] advocated a large epithelial lip flap or Thiersch graft in cases of recurrent pterygium, and urged care in the proper placing of the graft. He states that in applying the graft it is sometimes necessary to tuck the edges in under the loosened conjunctiva, and once or twice he has protected the well applied graft by temporarily drawing the conjunctiva over it with a suture. The flap should be slid directly from the razor to the globe. The excess on the temporal side is clipped off so as to leave bare the cornea, and also a strip of sclera about one-sixteenth inch wide between it and the flap.

Duverger[18] excises the pterygium, takes a graft from the mucous side of the lower lip near its junction with the gum, and sews it between the cornea and the cut conjunctival edges with four stitches. He has used the epithelial graft in many cases and has never had a return of the pterygium after this method. His chief objection to skin is that the graft exfoliates and produces a disagreeable secretion. He has therefore resorted to the mucous grafts. He has also taken as a graft a piece of bulbar conjunctiva from the region near the superior rectus muscle of the other eye, with an even better cosmetic result.

Elschnig[19] describes and illustrates a method for relief of recurrent pterygium by taking a flap of conjunctiva from the margin of the cornea opposite the pterygium, having a pedicle above and below on the vertical meridian, and sewing this between the cornea and the margin of the pterygium. For many years, my associate Dr. H. L. Wolfner, and myself, have been using epithelial grafts in the treatment of recurrent pterygium, and in our experience it has been the only method which has proved universally satisfactory. The method is simple. Thorough anesthetization is highly important. Mere instillation of cocaine seldom accomplishes this, but should be followed by subconjunctival injection of procaine with epinephrine, as the thick massive recurrent growth can not be altogether deadened by instillation alone.

A firm grasp of the neck or lower portion near the apex is obtained with the forceps, and a clean dissection of the growth started from below, including a margin of the apparently clear cornea for a distance of at least one or two millimeters. After getting under Bowman's membrane, an effort should be made to remain in the same corneal layer in the dissection, just as one does in splitting the cornea preparatory to a scleralcorneal trephining, or in resection of a corneal opacity.

The dissection is continued beyond the sclerocorneal margin, including the wide pterygial base, and the pterygium excised beyond the scleral margin. It is not necessary to include much of the base, but it is essential to undermine and loosen it, as well as the normal conjunctiva above and below. Bleeding soon stops.

An epithelial graft, as thin as possible, is then taken from the inner side of the arm, and transferred direct from the razor to the front of the globe. Here it is spread out evenly and then slid under the undermined conjunctival

edge for a distance of four or five millimeters. It has been our custom to permit the graft to slightly overlap the corneal margin, although Gifford does not think this is essential. We have never found it necessary to use a stitch to hold the graft in place. The superabundant edge of the graft is then clipped off with scissors.

The lids are carefully closed, and covered with a dry gauze pad over which are placed adhesive strips. No after care is required except daily cleansing of the lids for a few days, and reapplication of the pad. After four or five days the pad is left off and cold applications over the closed lids are recommended until the redness and thickening have disappeared.

To my knowledge, we have had only one recurrence after placing an epithelial graft in this manner, and that is in a patient operated only recently. In this patient, new vessels appeared under the graft, directed toward the center of the cornea. We have considered using the thermophore in this case, pasteurizing the tissue well ahead of the advancing vessels.

The chief disadvantage of the use of skin is the unsightly appearance of the graft, which looks like a piece of mother of pearl. This can easily be remedied, however, as we have often removed the skin graft at least six months or a year after its placement, without fostering recurrence of the pterygium. I have never tried the mucous graft, for it always seemed to me that the similar nature of the mucous graft might lend itself more to the same tendency to progress over the cornea through its very fusion with the conjunctiva. The case reports of some ophthalmic surgeons of wide experience, however, seem to prove otherwise.

900 Carleton building

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TECHNIQUE OF THE MOTAIS OPERATION FOR PTOSIS

WEBB W. WEEKS, M.D., F.A.C.S.
NEW YORK

A literary review of the Motais operation is given, incorporating some changes in technique since its inception thirty-one years ago. The author describes what he has found to be a secure suture for the superior rectus tendon slip, the tendon slip being carried through a subconjunctival tunnel on to the anterior surface of the tarsus, and supported by a fold of the levator tendon.

The object of the Motais operation is to elevate and give movement to the upper lid by the use of a central slip from the superior rectus tendon and muscle.

It is indicated in the higher degrees of ptosis with paralysis of the levator palpebræ muscle where the superior rectus muscle is functioning normally. Should an epicanthus or a vertical deviation of the eyeball be present, if diplopia is elicited, these errors should be corrected. A lateral squint may be corrected later.

The following instruments in order of use should be laid out: Ehrhardt lid clamp, scalpel, tissue forceps, Knapp scissors, lid speculum, black silk suture no. 3 with needle, needle holder, strabismus hook, short narrow cataract knife, two double-armed braided silk sutures no. 3, one single-armed silk suture no. 2, and a small rubber strip.

The skin area of the lids, brow, and cheeks should be washed with green soap and water. This in turn is thoroughly washed off with a one to five thousand bichloride solution. After drying the part, a thin coating of three per cent iodine is applied and allowed to dry.

A general anesthetic is given children, but with adults local anesthesia does very well. The conjunctiva is anesthetized by six instillations of four per cent cocaine, five minutes apart, followed by several drops of one to one thousand adrenalin solution. The tarsal and orbital lid areas and the subconjunctival fornix areas are infiltrated with two per cent novocaine with one minim of one to one thousand adrenalin added to each c. c.

The **operative procedure** is carried out by the following stages:

First stage: Insert the broad end of a Jaeger lid clamp or of an Ehrhardt clamp under the lid into the cul-de-sac, with the vaselined concavity toward the eyeball, and seven mm. above the center of the upper lid margin make a ten mm. incision parallel to the lid margin down to the tarsus. Undermine the skin, orbicularis muscle, and levator tendon, lifting them away from the tarsus in an area five mm. broad, down to just above the line of the follicles of the cilia. The upper, cut edge of the levator tendon is lifted up and Müller's muscle is caught up and carefully cut through. By blunt dissection upward, keeping close to the conjunctiva, a tunnel is made well back over the fornix area and down under the bulbar portion of the conjunctiva. The anterior surface of the levator tendon is exposed, and freed from the orbicularis muscle up to the reflection of the septum orbitale fascia. There is a little bleeding during this stage. The Jaeger plate or Ehrhardt clamp is removed, and this area is left alone until a later stage of the operation.

Second stage: The lid speculum is inserted. The patient is directed to look down. The single-armed number three twisted silk suture is inserted through conjunctiva and episcleral tissue, just above the limbus, in the vertical meridian. The two suture ends are long and are allowed to run down on to the cheek, to be used as tractors to permit rotating of the eyeball well down.

Third stage: About eight mm. up from the limbus an eleven mm. horizontal incision is made from just beyond the temporal border of the superior rectus muscle insertion to just beyond its nasal border. The conjunc-

tiva is dissected upward, meeting the area undermined previously in stage one. Tenon's capsule is picked up on the nasal side of the tendon and opened with the Stevens scissors. A strabismus hook is slipped under the rectus tendon, and its tip elevating Tenon's capsule on the opposite side of the tendon is nicked with the scissors.

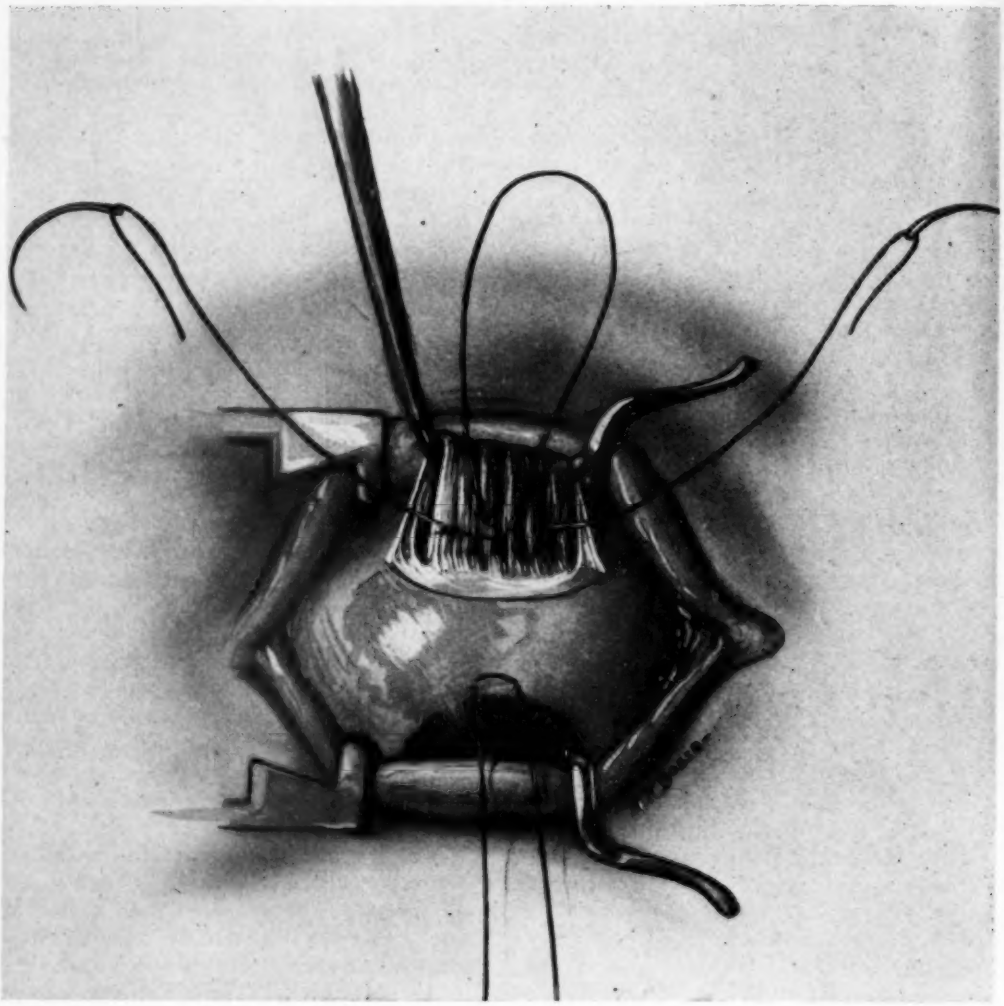

Fig. 1. (Weeks.) Shows eyeball rotated down by a limbal suture. Horizontal conjunctival incision with exposure of the tendon, which is held up and a loop suture running through the muscle fibers inserted.

Lift the tendon up with the strabismus hook, holding it taut to the insertion. Two mm. above the insertion pass a double-armed silk suture no. 3, as shown in illustration no. 1, one needle passing from the nasal to the temporal side, catching just nasal to the middle of the tendon and emerging a little temporally just beyond what would be the line of junction of the middle and outer one-third. The other needle is passed in the same way, only starting a little above the other, and running from temporal to nasal side. This central two-thirds of the tendon is lifted up and with a narrow knife is cut free close to its scleral insertion. The strabismus hook is withdrawn. Holding the tendon slip, cut with

Knapp's scissors along either side, freeing this central slip backward for at least ten mm. Removing the speculum and holding the lid up and away from the globe, a hemostat is passed through the skin wound of the lid down to the conjunctiva, following up along its dissected surface around the fornix to appear in the wound made for the exposure of the superior rectus tendon. The blunt eyelet ends of both needles of the suture holding the tendon slip are grasped, and gently the hemostat is withdrawn. The tendon slip is drawn upward and downward into the lid wound. The bulbar conjunctival wound is now closed with interrupted 000 catgut sutures. The suture holding the globe down is removed.

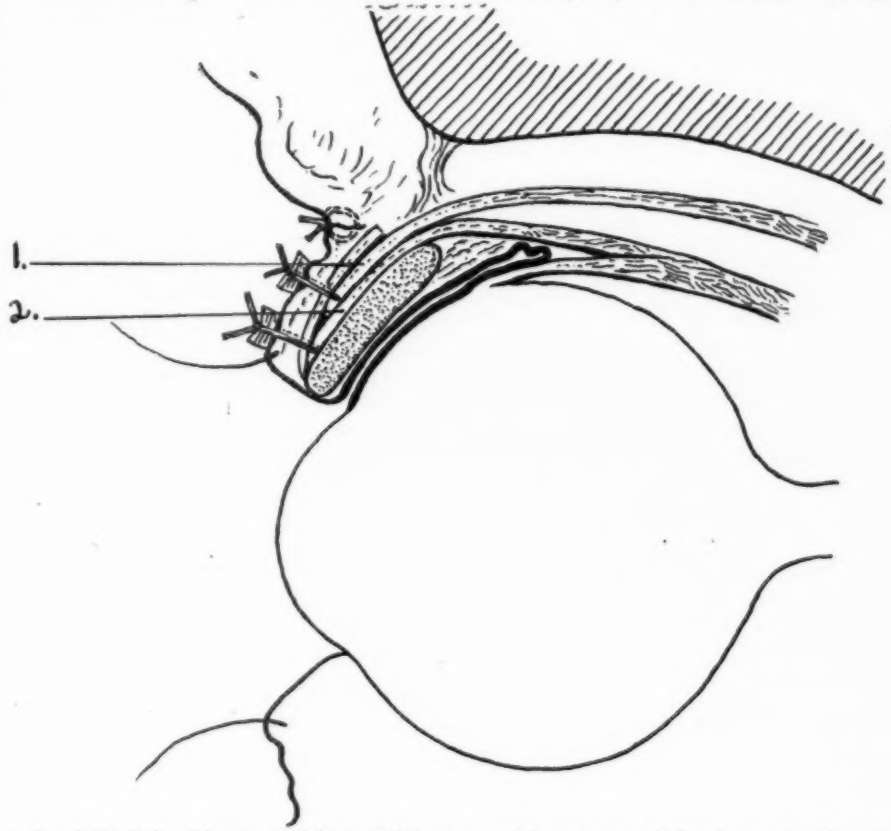

Fig. 2. (Weeks) Shows position of lid parts with sutures tied. 1, supporting tendon of levator palpebræ muscle. 2, tendon slip of superior rectus muscle.

Fourth stage: The double-armed silk suture of the tendon slip is then passed down along the anterior surface of the tarsus, the needles being brought out three mm. apart just above the cilia, in the median line. Some operators bring this suture out in the intermarginal space in the gray line of the lid margin. Before the two ends are tied, a reinforcement suture of silk may bind the tendon slip to the border of the tarsus as it comes through the opening above it, or, what seems better, both because of the support and of the reenforcement it gives, is to insert a double-armed suture through the levator tendon just below the level of the septum orbitale reflection, and to carry it down along the same tunnel, the needles emerging just above those of the tendon slip. These sutures are then tied over a narrow rubber strip, as shown in illustration no. 2. As the sutures are tied and the knot is tight-

ened, the lid, by pressing upward with fingers on the lid margin, is pushed gently up along the sutures. Then the suture holding the slip, which is now under no tension and is being allowed to slip easily in the tunnel, is tied over the same rubber pig just below the first suture. The amount of upward lift to the lid, before the sutures are tied, depends upon how wide the palpebral fissure is and it is governed by the exact amount of correction desired, usually to the level of the limbus above. The skin wound of the lid is then closed with interrupted black silk sutures. The eyeball exposed is covered with white vaseline. A covering of moist cotton hollowed out and allowed to dry a little is fitted over the orbit, cotton filled in about this, and adhesive strips applied to hold all in place. A moderately firm bandage is applied. It may be well, especially in infants, to cover both eyes for several days. But it is essential to dress the operated eye on the second day, and daily thereafter, to keep the cornea from becoming dry and abraded, and so offering the possibility of a keratitis e lagophthalmo.

The **complications** arising in the various stages and the manner of handling such situations are enumerated as they may occur.

First stage: Incision too low or too high makes it difficult to expose the area of opening for the tendon slip. In such a case it is better to make another incision in the proper position.

Second stage: Cutting too much of the rectus away to make a slip is likely to permanently weaken this muscle, impairing its action and giving a diplopia in the upper fields. If such happens, it would be better to reapply the tendon section removed and to try some other form of operation—such as the Reese procedure.

Third stage: Cutting too narrow or too short a slip tends to facilitate the loss of the slip by sutures tearing out. It would hardly be worth while to continue if too narrow a slip has been made for the ten mm. length, but if only started it can be widened. If too short, return and carry incision back the required distance. Failure to place slip beneath conjunctiva, the latter not being accurately closed, leads to the formation of granulations, with danger of infection. Failure of proper insertion of the tendon slip sutures leads to a loss of the tendon slip, it sliding up out of its track in the lid structures. Should such an accident happen, it is necessary to go in immediately, expose the slip, reapply the suture, and finish the operation a second time.

Fourth stage: Failure to reinforce and support the lid may lead to pulling out the suture, and to loss of the slip when the patient begins using the lids in an effort to close them. Such an accident necessitates doing the operation over again. Sometimes the slip may be picked up near the opening made for it above the tarsal margin. If the correction be too great, leading to abrasion and ulceration of the cornea, then to save the eyeball the slip has to be cut and the lid margins approximated until the danger is past. Later another graduated type of correction may be done. Where this does not occur, but there is an inability to close the lids fully and a possibility of such a condition threatens at some date, it may be well to open up the lid wound and slide the tendon back a little, reattaching it higher up and allowing the lid to fall a little lower, a graduated correction.

Usually, where the operation is done properly and carefully, the sutures can all be removed on the sixth day and the dressing left off. Further care may include frequent irrigations with a boric acid solution, instillation of liquid albolene for a time, and bichloride ointment used at night until the lid settles and the margins are quite approximated in sleep. Where the operation is carried out according to this technique the results are excellent.

Commenting upon some of the objections and changes in procedure, as indicated in this review, there is no adhesion of the lid to the globe as thought inadvisable by Shoemaker. The whole procedure can be done through the lid

incision as described by Kirby, pushing the fornix and bulbar conjunctiva downward, exposing the superior rectus tendon, and taking the central slip, thus avoiding any conjunctival incision. When done under local anesthesia this is a difficult procedure, and in any case not to be advised for the novice. Objections to tying the central tongue suture in the gray line seem, first, if traction is made on it, that there is a pulling upward of tissues with slipping upward of the tendon, second, that irritation about the marginal sutures may lead to cicatricial formation, producing later a bowing upward of the central portion of the lid. It should be noted that the central tendon slip is placed at varying distances, as the case requires, on the anterior surface of the tarsus, held snugly down by the aponeurosis of the levator tendon. As the tendon slip heals in place it becomes a part of this aponeurosis and acts directly on the tarsus, so that in being moved by the tendon slip the lid is moved as a whole, and not as some suppose in one narrow central area.

Tunnelling subconjunctivally, allowing the rectus muscle tendon slip to lie behind the conjunctiva, exposing the rectus tendon by a single horizontal conjunctival incision, making a loop suture in the tendon slip, bringing the tendon slip under the tarsal aponeurosis of the levator, and supporting this tendon slip by a fold of the levator tendon all tend to secure the successful correction of a congenital ptosis.

20 East Fifty-third Street

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VOLUNTARY PROPULSION OF BOTH EYEBALLS

HORACIO FERRER, M.D.S.
HAVANA, CUBA

As shown in the photographs, the patient, who has normally a slight condition of exophthalmos, can at will dislocate either eye separately or both simultaneously out of the orbit. The maneuver is executed without discomfort or decided effort, and the eyeballs are returned to the orbits with equal facility and control. Read before the Academia de Ciencias de la Habana, July 20, 1928.

Some time ago the Cuban newspapers contained a report that a traveller in the rugged mountains of the Baracoa district, in the province of Santiago de Cuba, had met a young half-breed, who without effort was able to dislocate his eyeballs from their orbits and return them to their natural position.

When I read this statement, never having encountered anything of the kind, I looked for information in the medical literature available, and, not finding a report of any clinical case of this character, I concluded that the description might be due to a misunderstanding. To my surprise, this man was brought to my clinic a week later.

The patient, Avelino Perez Matos, is nearly twenty years old, and has twelve brothers and sisters, all normal. He has always had very prominent eyes. At the age of five or six years he began voluntarily to display this remarkable maneuver of propulsion of the eyeballs, sometimes to amuse his parents, on other occasions to scare his brothers, sisters, and playmates. The trick became easier of accomplishment as time went on.

The patient is markedly prognathous, and the roof of the mouth presents a high gothic arch. He gives the impression of being mentally defective, although it must be mentioned that he is illiterate, has lived all his life in the mountains, and only came to town for the first time two weeks ago.

There is a natural protrusion of the eyeballs, depending in part upon an exceptionally small size of the orbits, and probably also upon an intraorbital panniculus adiposus of more than normal development, as well as upon frequent repetition of his trick of voluntary propulsion of the eyeballs.

The visual acuity without correction is for the right eye 20/40, and for the left eye 20/30. The visual field is normal and free from scotoma. The extrinsic muscles have normal function, but there is alternating divergent strabismus of twenty degrees, the left eye fixing by preference. The accommodation is normal, the media clear, the fundi normal, color sense and tension normal.

The propulsion is executed with astonishing facility, the eyes being opened steadily and pushed straight forward for nine millimeters. This position is maintained for several minutes without any indication of discomfort and without any reduction of visual acuity, although the power of rotation is quite limited. The eyeballs are then returned to their normal position without difficulty. The propulsion and retraction are effected with both eyes simultaneously or either eye separately, but in the latter instance the eye which is not propelled is closed slightly.

To explain this phenomenon it is necessary to discuss some details of the anatomy and physiology of the eyes. The human eye is placed almost in the center of the orbit, and is easily capable of rotary movements about the vertical and transverse axes, but in spite of its extreme mobility it cannot move forward or backward, being held in a definite anteroposterior position by means of the panniculus adiposus which serves as a cushion, by the extrinsic muscles, by the capsule of Tenon with its orbital and muscular prolongations, and by the eyelids. This anteroposterior fixation is necessary to avoid stretching of the optic nerve, which is, however, sufficiently lax to allow of rotation of the eyeball within the orbit.

There may be a normal appearance of exophthalmos in stout persons, due to excessive development of the retrobulbar panniculus adiposus, or, due to scanty development of this fatty tissue, the eyes of lean persons may appear to be somewhat sunken in the orbits. Experimentally, it is possible to cause ocular protrusion of one millimeter by pressure upon the jugular veins or by holding the patient with his head lower than the rest of the body while the eyes are kept open. It is easy to understand that accumulation of blood in the retrobulbar vessels causes this change of position. It is also possible to obtain slight displacement, less than a millimeter, by drawing a long breath and retaining it for a long time. Beside this exophthalmos, which we may term physiological, there are various pathological types of exophthalmos. But in none of these normal or abnormal conditions do we find the power voluntarily to propel the eyeballs outside the orbits and to return them to their natural position.

The mechanism by which Avelino Perez produces this phenomenon is easily recognizable. It depends upon his ability to contract the two oblique muscles, the propulsors of the eyeball, at the same time relaxing the four recti which serve as retractors, and opening the eyelids widely. Abandoned to the control of the oblique muscles, the eyeball passes through the palpebral fissure, smoothly and without violence, more or less rapidly according to the patient's wishes. When more than half the eye has been dislocated from the orbit, the patient contracts the orbicularis muscle behind the equator of the eyeball and holds the ball in position as long as he desires. To return the eye into the orbit, he relaxes first the orbicularis and then the obliques. Naturally Avelino Perez is unable to explain the trick which he employs to provoke the phenomenon by which he has acquired notoriety.

I do not believe that this youth can continue indefinitely to exercise his interesting ability without danger to vision. Until recently he only protruded the eyeballs occasionally, but now, having become a public figure, he will be called upon to practice the trick more frequently, and it is quite possible that in a few years some irreparable injury may develop in the optic nerve or in the retina.

Avenida de Wilson y L.

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Avenida de Wilson y L.

SPONTANEOUS RESORPTION OF JUVENILE CATARACT

HORACIO FERRER, M.D.S.
HAVANA, CUBA

The patient, a Cuban negro of sixteen years, gave a history of progressively developing blindness in first the right and then the left eye. The vision of the right eye began to return while that of the left was still failing, and vision was later recovered in the left eye. The ultimate condition in each eye was complete absorption of lens substance, with a buttonhole slit remaining at the center of a wrinkled anterior capsule. Vision of 20/30 was obtained with plus eleven diopter sphere. Read before the Academia de Ciencias de la Habana, June 22, 1928.

The patient whose case is here reported is a colored boy who was blind from juvenile cataract in each eye, and who recovered his vision by spontaneous resorption of both lenses.

Since early in the last century, several instances of spontaneous recovery from cataract have been published, particularly in cases of monocular cataract and of dislocation of the lens.

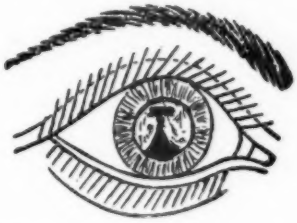
In 1835 Warnatz published two experiences of this kind; the first in a man of forty years who had had cataract in both eyes, but whose lenses, years later, were found to be totally absorbed; the second in a woman of forty-five years. It was not until 1877 that Becker published the Brettauer case, which first clearly established the possibility of this mode of removal of cataract, since some authors had been skeptical as to the cases quoted by Warnatz, maintaining that the record belonged to the preophthalmoscopical period and was therefore unreliable. In the case reported by Becker, a man of thirty-five years had had in 1862 a mature cataract in the right eye and a semimature cataract in the left. The right eye was operated upon and obtained vision of 20/50 with plus six diopter sphere, so that operation upon the left eye was not necessary. Nine years later, when the patient came for a change of glasses, Brettauer noticed a greenish discoloration of the left iris, and behind the iris, which was tremulous, was a star-shaped whitish membrane containing numerous cholesterin crystals which were afterward gradually absorbed. Twelve years after the first examination this eye obtained fifty per cent of normal vision with plus six diopter sphere. There had unquestionably been spontaneous resorption of the lens.

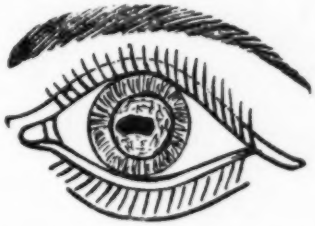
Since that time further reports have been published by Lange, Schmidt-Rimpler, Nordmann, Natansen, Krukow, Vossius, Hippel, Reuss, Trousseau, Lindahl, and others. Reuss, in a paper published in 1900, gathered thirty-three cases from different observers. In 1907 a case was added by Menacho. In 1908, in the "Encyclopédie Française", Dor referred to about eighty known cases. In 1918, Gonzalez of Mexico published two cases, one, very interesting, of resorption of both lenses. A further case was reported in 1926 by F. E. Woodruff (St. Louis Ophthalmological Society).

Author's case: Julian Miranda, Cuban negro aged sixteen years. Parents healthy, seven brothers living and well, one dead of measles. In April or May, 1925, the vision of the right eye began to fail, without pain or other symptoms, and four months later the vision was reduced to light perception. In August, 1926, a like disturbance began in the left eye, but the patient noticed at the same time that the right eye was recovering its vision. For eight months the patient was without sight in the left eye, but after this the vision returned to this eye as it had done to the right, until in each eye sufficient vision was obtained to enable him to walk without difficulty.

The patient consulted me on October 22, 1927, when, after recording the above history, I found in the dark room that each lens had been absorbed, leaving only the anterior capsule. The capsules were wrinkled, but in the mid-

dle of each was an opening like a buttonhole, sufficiently large to allow the light to pass. In the left eye there was still some cortical matter in course of absorption. No other details of note were found. Feeling that I had to deal with a case of juvenile cataract in which spontaneous resorption was almost complete, I advised no immediate treatment, but requested the patient to return three or four months later.





On December 8, 1927, I found absorption practically complete in the left eye, and I prescribed plus nine diopter spheres. Recently (June, 1928) I again examined the patient. Resorption is complete, and the small opening in each anterior capsule is clear and black, permitting a view of the fundi, which are normal. Each eye obtains vision of 20/30 with plus eleven diopter sphere, and with plus fifteen diopter sphere the patient is able to read the third size of letters on the Jaeger chart.

It is interesting to note that the patient lives in the town of Consolacion del Norte, among the mountains of Pinar del Rio province, where there is no rail or road communication, and where, on account of the isolation of his abode, he was unable to consult an eye specialist or even a physician, so that we cannot impute to any scientific treatment the possibility of its having contributed to produce this phenomenon. The patient and his family regard his cure as due to the constant local use of whites of eggs, honey, and olive oil.

I asked Dr. Albert Recio to make detailed laboratory examinations of the urine, blood, and spinal fluid. But these examinations (including the Wassermann and the Lange) were negative except that the presence of a nephritis was indicated by the finding of granular casts, erythrocytes, albumen, and kidney cells in the urine.

Avenida de Wilson y L.

THE "MONGOLIAN EYE"

H. GIFFORD, M.D., F.A.C.S.
OMAHA

The common impression that a slanting palpebral fissure is characteristic of the Mongolian race is criticized as exaggerated. This peculiarity probably does not occur much more frequently among Mongolians than among Aryans. The popular error is analyzed as being partly due to narrowness of the Mongolian palpebal fissure and partly to a fondness of Mongolian artists and actors for this type of fissure, which they produce or intensify by cosmetic devices. It is further denied that complete epicanthus is a Mongolian race characteristic.

By "eye," of course, I do not mean the eyeball but the expression of the eyes as conveyed by the adnexa. Some years ago I began to realize, as others have done, that the current opinion as to the obliquity of the palpebral fissure in Mongolians had very little foundation.

The study of 340 photographs of Chinese and Japs, and of 500 natives in Kioto and Yokohama, showed only about ten per cent in which any noticeable upturn of the outer angle of the fissure was present in one or both eyes. Of anything remotely suggesting the fiendish obliquity which we commonly

see depicted on paper and on the stage there was less than 0.25 per cent. Examination of thirty photos of other Mongolian people showed a similar scarcity of marked fissure-obliquity. (Incidentally the 340 photos showed

Fig. 1. (Gifford). Japanese girls, showing straight fissures, unusually wide on account of youth and excitement.

practically the same proportion of fissures turning somewhat down at the outer angle as of those turning up.)

I then began noticing the position of the fissure in my own non-Mongolian patients, and found that out of 476 nearly fifteen per cent showed quite a perceptible upturn of the outer commissure. I also find that Merkel and Kallius (Graefe-Saemisch Handbook, second edition, part 1, volume 1, chapter 1, page 17) say that on the average the inner commissure (presumably in Germans) stands four to six millimeters lower than the outer one. It is not quite fair to compare the fifteen per cent of slants seen in my office, where the eyes could be examined close up and deliberately, with the ten per cent seen in Mongolian photos and hospitals and on the street; but these results demonstrate rather forcibly that there is no great disparity between the proportion of slants among Mongolians and that among other races.

Now, if the Mongolian eye is not commonly oblique, what is the characteristic which produces its peculiar expression? A moment's critical examination of figures 1 to 3 will show that the predominant eye-feature in these Mongolians is the narrowness of the fissure, generally associated with an unusual width and fullness of the space between the eyebrow and the upper margin of the fissure margin. In other words, the Mongolian eye instead of being a slant-eye is a slit-eye, the upper margin of the slit frequently being formed by the edge of the redundant suprapalpebral skin which conceals the real lidmargin and often, to some extent, the upper lashes.

The fissure is sometimes still further narrowed by the redundant tissues of the lower lid. This, together with the fullness of the tissues and the wide space between the eyebrow and the

Fig. 2 (Gifford). South China officials. (P. and A. photographs)

slit, is generally the result of a rudimentary development of the frontal eminence. This is well shown in figure 4, where the plane of the front surface of the skin of the upper lid is slightly in advance of the upper margin of the orbit.

This difference in the prominence of

the supraorbital region is chiefly dependent on the development of the frontal sinus. In the Japanese shown

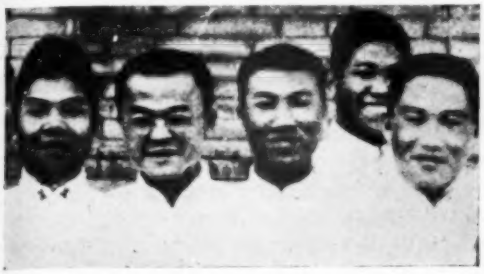


Fig. 3 (Gifford). Staff of hospital in central China.

in figure 4, the radiograph of these sinuses showed them to be quite rudimentary. The fullness of the tissues between the eyebrow and the margin of the fissure depends upon the same peculiarity, since it is obvious that with a given amount of skin and orbital stuff in the embryonal "anlage" a rudimentary frontal development will use up less of this stuff to line the upper wall of the orbit and more will be left to be pushed forward and perhaps help to narrow the palpebral fissure.

Of course, the high cheek-bones, the flat nasal bridge, and the tendency to

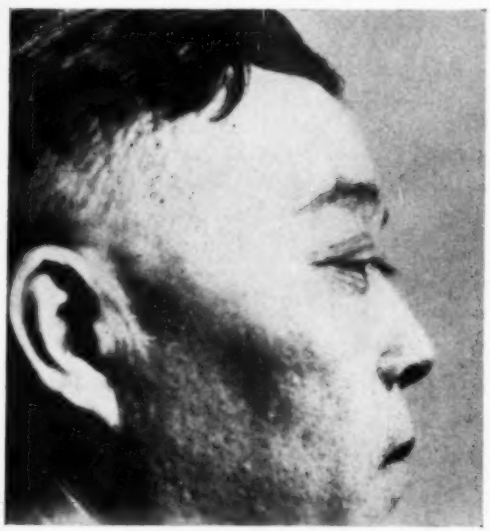


Fig. 4 (Gifford). Japanese, illustrating slight development of frontal sinus. Eyelid farther forward than plane of forehead.

prognathism all go to make up the typical Mongolian face; but, as far as the expression of the eye is concerned, the poor development of the frontal prominence (and of the nasal bridge) with its secondary results is the deciding feature. Nordics and other non-Mongolians have no call to pride themselves upon the marked development of their frontal sinuses. This is, of course, no indication of unusual brain-power nor even of any biological eminence. On the contrary, the flat Mongolian face is probably higher in the scale of evolution than the deep-eyed type. This is indicated by figure 5, which shows one of the last rem-

Fig. 5 (Gifford). Tasmanian aborigines, showing deep-set eyes.

nants of the Tasmanian aborigines, who, culturally and intellectually, were at the bottom of the human scale. Likewise the pigmies of Africa and of the East Indies, and the aborigines of Australia, India, and Japan—that is, practically all of the lowest races of man—are generally deep-eyed. While in many cases this is due in part to a thick bony crest, in many others it is apparently the result of well-developed sinuses.

The question naturally arises why, if the foregoing is true, should the belief in the prevalence of Mongolian slant-eyes exist? This depends upon several considerations. First, with a given number of up-slanting fissures, the impression of obliquity is much more readily conveyed by a narrow fissure set out on the surface of the face than by a relatively wide fissure set back under the eyebrow. Under

the former conditions the least upward slant is readily noted, while with a deep-set wide eye the same slant would attract no attention unless it were looked for. This is illustrated

Fig. 6 (Gifford). Nepalese woman, showing lack of "Mongolian" effect in spite of well marked obliquity. (Asia Magazine.)

by the Nepalese woman in figure 6. Her eyes have a decided slant; but, because the fissures are wide and the other features are not characteristic, the slant is not striking and no special Mongolian effect is conveyed.

Another feature which gives the slanting expression of the Mongolian eye is the scanty development of the outer portion of the eyebrow. I am not certain that this occurs more often in the Mongolian than in other races, but when it does occur in Mongolians more attention is paid to it. In such individuals, the heaviest part of the eyebrow ends on the up-slant, gives a certain slantiness to the expression of the eye. This condition is shown in three of the men in figure 3.

Perhaps the most important influence, however, in building up this belief in the Mongolian slant-eye is the fact that both in China and Japan slant-eyes are considered a mark of intellectual and social distinction; and native artists love to depict their notables in this guise. Whether Confucius was gifted with this peculiarity may be uncertain, but one of the best known of his portraits shows a decided, though not excessive slant. Oddly enough the old statues of Buddha show little or no slant, while many of the modern Buddhas are fearfully and wonderfully made in this respect.

The cult of the slant-eye is perhaps even more pronounced among the Japanese artists than among the Chinese, it being considered a most aristocratic feature and formerly having been regarded as almost a special privilege of the upper classes of the Samurai. It is generally supposed to be connected with the long oval face, without high cheek-bones, shown in figure 7. So far as I have observed, however, the slant-eye is fully as common in the ordinary broad-faced type as in the oval-faced one. There may be a certain basis of fact for this belief in the connection between slant-eyes and the Japanese aristocracy. On a brief visit to Kioto (for several hundreds of years the capital of the empire and the stronghold of the fighting class), I certainly found a remarkably large proportion of slants (twenty-five per cent); while in the streets of Yokohama I found only six per cent.

Fig. 7 (Gifford). Samurai family.

Naturally enough this legend of the connection between slant-eyes and distinction of various kinds was taken up by the stage, and in examining the photographs of Mongolian actors in costume one can not help noting the unusually large proportion of slants.

This is probably in part due to the natural attraction which the stage has for slant-eyed individuals, but more to the fact that if an actor, especially in China, is not gifted with slant-eyes, he proceeds to simulate them by applying tight-laced adhesive bandages to the scalp, which draw up the outer corners of the fissures.

Whether the Japanese actors use this device I am not sure, but they certainly are very fond of accentuating the slant by applying paint to lengthen the fissure upward and forward and downward and inward. To still further emphasize the slanting effect, the outer portion of the eyebrow is shaved or painted out, while the middle portion is prolonged upward and outward by stripes of paint. (Figure 8.)

Fig. 8 (Gifford). On the left, famous Japanese "movie" hero. Note slanting eyebrows and unusual double "fold." On the right, Japanese actor, showing extreme example of the slant motif.

This tradition that obliquity of fissure denotes lofty lineage or high attainments is carried on the stage in a negative as well as in an active way. Generally speaking it is only the warriors or heroes and heroines of the classic drama who are thus arrayed; while the common people, and, in the modern drama, all classes generally allow their eye-fissures and eyebrows to take the natural course.

Another cause for the prevalence of the belief in slanting eyes as a Mongolian characteristic is careless observation by globe-trotters. Under the preconception of the common notion, they think they see slants where they only see slits, and freely announce their misobservations to the world. A recent article on the Buriats, a Siberian-Mongol tribe, conveys the implication that they have slanting eyes, whereas the photographs which are given by the author show nothing but slits. A writer on the wild Indians of eastern Panama says that practically all of them showed the oblique Mongolian eye; but careful examination of some sixty of his photographs of these people showed me not a single slant.

A physician who had spent several years in China told me, after I had shown him some hundreds of Chinese eyes with only an occasional slant, that he would have taken his oath that a large majority of the Chinese had slanting eyes. In other words, as indicated above, having received the story that the Chinese were slant-eyed, he saw the slits and assumed that they were slants.

It may be questioned whether some of the narrowness of the Chinese fissure is not due to lack of that protection from light which is enjoyed by the deep set eye. This undoubtedly shows its effect in photographs taken out of doors, but even in pictures taken in the shade the fissure, in general, appears much narrower than in the non-Mongolian eye.

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The down-slant at the outer angle of the fissure, frequently seen in Aryans as well as in Mongols, is generally due to overhang of the outer part of the suprapalpebral skin.

The almond eye or triangular eye of the Orient is generally produced by a fissure which is rather wide in the inner half, but is narrowed in the outer half by overhang of the skin. This almond effect is accentuated by a slight epicanthus.

The Mongolian fold. Another supposed characteristic of the Mongolian eye is the "Mongolian fold." This is described by some writers as nothing more nor less than our well known epicanthus. Fuchs and other authorities speak of epicanthus as being a normal characteristic of the Mongolian race. This is misleading. Well marked epicanthus in adults, so far as I have observed, is not much more common among Mongolians than in other races. But, as Motais has so well pointed out (Annales d'Oculistique, 1925, p. 670), the fold which is commonly seen in Mongolians is a band (Motais used the French word bride) which passes obliquely from the skin of the upper lid to the side of the nasal bridge without curving downward and again outward as in epicanthus. (Figure 8.) It might be called a hemiepicanthus; but, while all gradations between a cord ending at the internal ligament and a complete epicanthus can be seen, the cases of marked epicanthus tend to disappear, as they do in non-Mongols, before or soon after puberty; while the lower grades persist through life in a much higher proportion among the Mongolians than among other races.

My material for figures on the frequency of the Mongolian fold is slight. Among 285 non-Mongolian patients in my office, I found about seven per cent of the lighter grades of the Mongolian fold (in the sense of Motais), with about 2.5 per cent of epicanthus; the latter all in children. Of sixty-four Chinese adults seen in California, about fifty-seven per cent showed the fold in a quite perceptible degree; while of thirty Chinese and Japanese children from three to ten years old, examined rather hastily, nearly fifty per cent showed a well marked fold, in addition to three or four cases of epicanthus. Among sixty-six inmates from twelve to eighteen years old at the Phoenix school for Arizona Indians (whose Mongolian connections are undoubted), I found about fifty-seven per cent of all grades of the fold, with one case of epicanthus.

Summary. The frequency among Mongolians of a palpebral fissure with the outer ends slanting markedly upward has been much exaggerated. It may be somewhat more common than among other races, although statistics so far collected do not indicate this, except those from the Kioto district of Japan. On the other hand, the occurrence of the same peculiarity among Aryans is much more common than is usually believed.

The most common and striking characteristic of the "Mongolian eye," and the one which has mainly given rise to the notion that there is such a thing, is the narrowness of the fissure, combined with and to some extent the result of a fullness and width of the space below the eyebrow and the margin of the fissure; this in turn being due to a rudimentary development of the frontal eminence.

The belief in the obliquity of the Mongolian eye has been fostered by the traditional fondness of Mongolian artists and actors for this style of fissure. These actors increase or produce obliquity of the fissure by artificial devices; and they still further exaggerate the impression of obliquity by painting in an upward and outward extension of the eyebrows. Moreover, obliquity is readily noticed when it occurs in a narrow fissure of the surface of a flat face; while it easily escapes notice when worn in a recessed eye with a wide fissure.

Complete epicanthus is not, as a number of good authorities assert, a race characteristic of the Mongol. It occurs frequently among their children, but it generally disappears to a

greater or less extent, as with non-Mongols, with the development of the bridge of the nose. A rudimentary epicanthus, however, in the shape of a fold extending from the skin of the upper lid obliquely downward and inward to the bridge of the nose, and persisting through life, seems to be much more common among Mongolians than with other races; but this fold is so easily overlooked that, in comparison with the narrowness of the fissure, it contributes very little to the peculiar appearance of the Mongolian "eye" in the average view. While the fold and epicanthus are more common in childhood, the slant and the narrow fissure are more common in adult life.

1620 Medical Arts building

GENTIAN VIOLET IN OPHTHALMOLOGY

RAYMOND J. SISSON, M.D.

DETROIT

Experiments with cultures of Staphylococcus albus seemed to indicate that gentian violet and acriflavine might be distinctly valuable in beginning intraocular infections. But in six cases of intraocular infection following injury, these dyes introduced into the vitreous, in dilutions varying from 1:15,000 to 1:5,000, were not effective, in spite of a temporary clearing of hypopyon after introduction of the dyes. From the pathological laboratory at the Massachusetts Eye and Ear Infirmary.

In view of the great claims made in recent literature for various members of the aniline dye group as antiseptics, especially gentian violet, it seems advisable to investigate their applicability to ophthalmological therapeutics.

Churchman showed that on artificial media gentian violet acted as a bacteriostat to the growth of gram-positive organisms, and acriflavine as a bacteriostat to the growth of gram-negative organisms, the combination of the two enhancing the value of each.

I undertook to repeat the work of Churchman on a small scale. The technique used was as follows:

(1) The water of condensation of a slant of Loeffler's blood serum was inoculated with one loopful of a thick saline suspension of Staphylococcus albus.

(2) Small sterile bottles were used and into each was put ten c. c. of the solution in various dilutions.

(3) A platinum loop three mm. in diameter was used, and one loopful of the above bacterial suspension was inoculated into each of the bottles. The bottles were placed in the incubator.

(4) At intervals cultures were taken from these bottles and placed in the water of condensation of a tube of Loeffler's blood serum, which was then run over the surface of the slant and placed in the incubator.

The results obtained from the above experiments were as follows, the cultures being read in sixteen hours. The numbers indicate colonies.

Group 1, gentian violet:

Dilution	5 min.	½ hr.	1 hr.	1½ hrs.	2 hrs.
1:500	125	36	16	1	0
1:1000	80	70	25	38	48
1:2000	10	80	40	30	70
1:5000	10	32	22	50	28
1:10,000	3	36	24	6	8

Group 2, gentian violet and acriflavine equal parts:

Dilution	5 min.	½ hr.	1 hr.	1½ hrs.	2 hrs.
1:500	3	0	0	0	0
1:1000	6	0	0	0	0
1:2000	6	60	1	0	0
1:5000	18	20	1	0	0
1:10,000	26	28	18	0	0

Group 3, acriflavine:

Dilution	5 min.	½ hr.	1 hr.	1½ hrs.	2 hrs.
1:500	200	105	115	30	10
1:1000	100	127	119	45	44
1:2000	32	102	130	80	90
1:5000	50	125	120	74	20
1:10,000	60	130	80	66	24

The experiments on laboratory media seemed to indicate that the dyes might be distinctly valuable, especially in beginning intraocular infections. It so happened that at this time six clin-

ical cases of intraocular infection occurred which offered a good opportunity to test the therapeutic value of the dyes. All were due to penetrating wounds and had hypopyon and pus in the vitreous. After a brief period of apparent improvement as judged by disappearance of the hypopyon, they progressed to a further stage and enucleation was performed in four.

The technique used was as follows:

(1) The usual preparation for operation was carried out.

(2) The syringe, graduated in tenths of a c.c., was filled with the solution and attached to a fine bore needle two inches long, and the needle was introduced into the vitreous chamber just back of the ora serrata.

(3) The anterior chamber was evacuated with a keratome.

(4) After escape of the aqueous 0.3 c. c. of the solution was injected into the vitreous.

I also tried the method on a rabbit, injecting one loopful of a Staphylococcus albus suspension into the vitreous. The next day an infiltration in the vitreous had occurred. Gentian violet, 0.3 c.c. of the 1:15,000 dilution, was injected, but the process continued until the eye was completely filled with pus. In the rabbit's other eye, two weeks later, I placed one loopful of a staphylococcus culture in 0.3 c.c. of a mixture of gentian violet and acriflavine equal parts, the dilution equalling 1:20,000 of each dye. In this eye also the process proceeded to panophthalmitis, although more slowly. The animal was killed three weeks after the first injection and enucleation of the eyes was performed. Smears and cultures taken from the vitreous showed many staphylococci present.

Cases

Case 1: Intraocular foreign body (steel) from the rim of an auto wheel, February 12, 1924. Conjunctival laceration at twelve o'clock; position, just above the limbus, with iris prolapse. Foreign body visible at the posterior portion of the eye, low down, above which there was a grayish haze having the appearance of exudate. Vision O. D. corrected to 20/30; O. S. fingers at one foot, corrected to fingers at two feet. Foreign body localized back of the cornea, seven mm. below and four mm. nasal to the optical axis. Before operation, February 14, 1924, light projection was good. There was a cloud in the vitreous seen by oblique illumination. Aqueous cloudy and a small hypopyon was present. Foreign body removed by drawing it over the superior portion of the lens into the anterior chamber. The hypodermic needle was inserted into the vitreous and the foreign body removed from the anterior chamber with a keratome incision, and 0.3 c. c. of 1:15,000 solution of gentian violet injected into vitreous. The following day the hypopyon disappeared, the aqueous was slightly cloudy. The second day afterward the aqueous became clear and no hypopyon was present. Four days after operation the chemosis increased and light projection became faulty, then a small hypopyon appeared and the vitreous exudate increased. Enucleation was advised, and the patient was discharged for a few days but did not return.

Case 2: Injury to O. S. February 2, 1924, by a piece of wire penetrating the cornea and iris. The day after the accident the pupil was partially dilated, some exudate was present at the site of the wound, also conjunctival and ciliary injection. The light projection was faulty and the vitreous cloudy. The second day afterward the infiltration of the vitreous increased and hypopyon appeared. Gentian violet 0.3 c.c. of 1:5000 solution was injected February 25, 1924. Less exudation. February 26, hypopyon disappeared, less conjunctival and ciliary injection. Vitreous densely infiltrated, tension low. Enucleation.

Case 3: In attempting to remove a small foreign body from the sclera, a local eye specialist perforated the globe and vitreous exuded. The vitreous became infiltrated, a small hypopyon appeared with some chemosis of the conjunctiva. X-ray negative for foreign body. 0.3 c.c. of 1:5000 gentian violet

was injected into the vitreous. As in the previous case the hypopyon disappeared in two days, but the vitreous exudation increased and enucleation was finally done.

Case 4: Explosion of a ginger ale bottle on March 5, 1924. A large corneal laceration was present, with prolapse of iris. Vision O. D. fingers at eighteen inches. Fundus not visible. At operation a few hours after the accident an iridectomy with conjunctival flap was done, and an injection of 0.3 c.c. of 1:10,000 solution of gentian violet and acriflavine given. There never was any evidence of an intraocular infection, and the vision on discharge and two months later was fingers at five feet.

Case 5: Two days prior to admission a piece of tin struck O. S. and entered the eye. Vision hazy. Entered the hospital April 7, 1924. There was a perforating wound of the cornea with hypopyon, traumatic cataract, and infection in the vitreous. Injection of 0.3 c.c. of 1:10,000 solution of gentian violet and acriflavine the day of admission. The x-ray showed the foreign body to be situated ten mm. back, five mm. temporally, and 8.5 mm. below, the size being 4 by 2 by 1 mm. The next day the hypopyon had disappeared. Two days later the chemosis increased and the deep infiltration was increasing, so enucleation was performed.

Case 6: Perforating injury to globe forty-eight hours before entrance to hospital, in July, 1925. Hypopyon and purulent iritis were present. The foreign body was removed through a small scleral incision, the anterior chamber was emptied, and the vitreous filled with 1:5,000 gentian violet. Light projection was present prior to operation. The infection was completely overcome but the vitreous was cloudy and the projection slightly faulty.

Comment

The results indicate that in the dilutions used, gentian violet and acriflavine, mixed in the vitreous, are not effective in overcoming an intraocular infection that has given visible evidence of its presence. Under ideal conditions for the dyes to act, such as was offered by the introduction of the bacteria and the dye at the same time in the vitreous of a rabbit, there was certainly no complete bactericidal action, for positive cultures were obtained from the vitreous one week later. The test was a severe one, for a very heavy bacterial suspension was used. Perhaps with a lesser virulence or number of bacteria it would be effective. Microscopical examinations of sections show that a solution of gentian violet up to 1:5000 does not harm the retinal ganglion cells.

In clinical cases we were deceived by the hypopyon clearing up in forty-eight hours, and thought at first that an actual cessation of the process had occurred.

By the time that one can be sure that infection is present in an eye, so much damage has already been done that useful vision cannot be saved. The condition which occurs is the formation of fibrous tissue bands which contract and separate the retina.

Dr. F. H. Verhoeff suggested and offered the laboratory facilities for this work. Most of the clinical material was taken from his service at the Massachusetts Eye and Ear Infirmary.

825 David Whitney building

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NOTES, CASES, INSTRUMENTS

EYELID EVERTER AND RETRACTOR

CONRAD BERENS, M.D., F.A.C.S
NEW YORK CITY

These lid everters,* which have been in use for several years, are pliable throughout and are made in two sizes, therefore can be adjusted to conform to any eyelid. Both sizes are seventy cm. long, but the lid plate of one is fifteen mm. and the other twelve mm. broad. The plate lying in contact with the tarsus is seven mm. in one and nine mm. in the other. The smaller size has been found more useful. The curved handle and roughened grip

make the instrument easy to hold and manipulate in removing foreign bodies, taking tonometric readings, and extracting the lens.

The instrument was originally designed for everting the lids for examination and treatment of the retrotarsal fold. The slight curve of the handle and grip, and the sharp curve of the plate applied to the eyelids, the curve of which may be altered, make it particularly useful for this purpose. Its light construction makes delicate handling possible. Its broad lid plate is of value for giving counterpressure in massaging the eyelids of trachoma patients. The lid can be everted and held in position by two fingers of the left hand, leaving the rest of the fingers free.

The lid everters have also been found useful in applying radium to the conjunctiva in vernal catarrh and other conjunctival diseases.

30 East Fortieth street

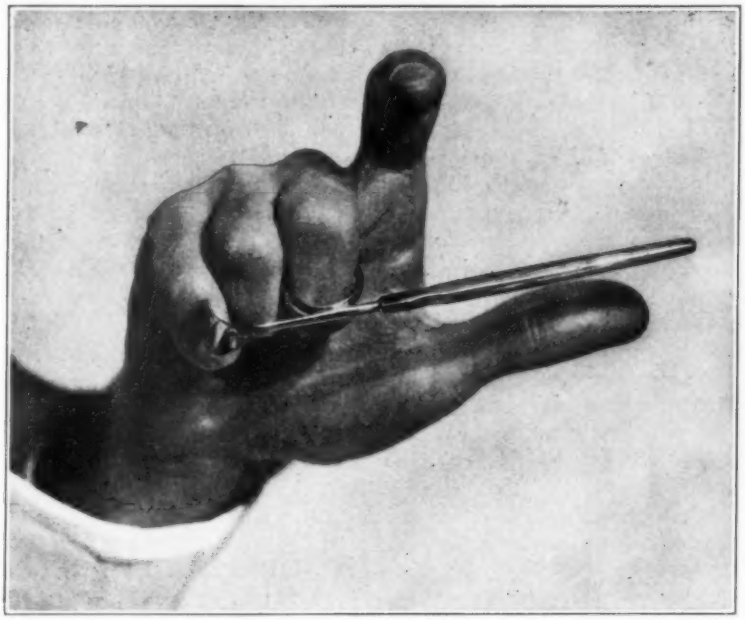
*Instruments made by E. B. Meyrowitz and Co.

A SIMPLE MODIFICATION OF THE DESMARRES LID ELEVATOR FOR USE WITH THE BRIDLE SUTURE

CLARENCE KING, M.D., F.A.C.S
CINCINNATI

Control of the eyeball by means of a suture through the superior rectus muscle in cataract extraction or in other operations in which the eyeball was to be opened has been used both in this country and abroad for many years. In 1925 Axenfeld most enthusiastically advocated the use of the bridle suture as a safeguard in cataract extraction. At the Dallas Meeting of the American Medical Association in 1926, in a discussion of Dr. John Green's paper, "Safeguards in cataract expression," the writer had occasion to detail his experience with this suture and expressed the conviction that the claims of Axenfeld as to its merits were fully justified. This opinion has been borne out by further experience. Recently Elschnig, in an article in the American Journal of Ophthalmology for April, 1928, entitled "Corneal suture in senile cataract extraction", urged the routine employment of this suture in every operation executed in the upper circumference of the cornea. Axenfeld uses lid hooks throughout the operation, and describes as an easy procedure the simultaneous traction by the hand of an assistant holding the suture and elevating the upper lid. This opinion has not been verified by my experience. It was found that it was difficult for the assistant to hold the suture through the superior rectus muscle with the thumb and forefinger and at the same time to make suitable traction with the lid elevator held in the other fingers of the same hand. This difficulty was overcome by the simple addition of a ring to the lower end of the Desmarres lid holder as indicated in the cut. The second finger is passed through the ring, the thumb and forefinger being used to hold the bridle suture. In this

way exact and independent control of suture and lid holder by the same hand is immensely facilitated. The advantages of this simple modification of the



lid holder for use with the bridle suture have been so apparent that the publication of a description of it seems justified.

707 Union Central building

QUANTITATIVE PUPILLARY LIGHT REFLEX*

LOUIS LEHRFELD, M.D.
PHILADELPHIA

Some time ago my attention was attracted to a difference of opinion between two internes at the Philadelphia General Hospital as to whether a certain patient's pupils reacted to light. I found that in testing the light reflex one resident was using a powerful pocket light, while the other had used the faintly lighted bulb of his electric ophthalmoscope. Both observers were right, as the pupils reacted promptly to the strong light and reacted but feebly, if at all, to the faint illumination.

This experience impressed me with the fact that we had no common basis of light intensity in determining accurately or uniformly the response of the pupil in light reactions. When we say that the pupils react to light we do not designate whether we refer to ordinary daylight, to focal illumination in the dark room, to the light of a candle, or to that of a pocket electric lamp. Yet the intensity of light used certainly makes a great deal of difference, and it is also important to know whether that light is projected on to the macula or the nasal or temporal area of the retina. The pencil of light from the slit-lamp will often cause prompt contraction of the pupil while that of the ophthalmoscope will give only feeble reaction.

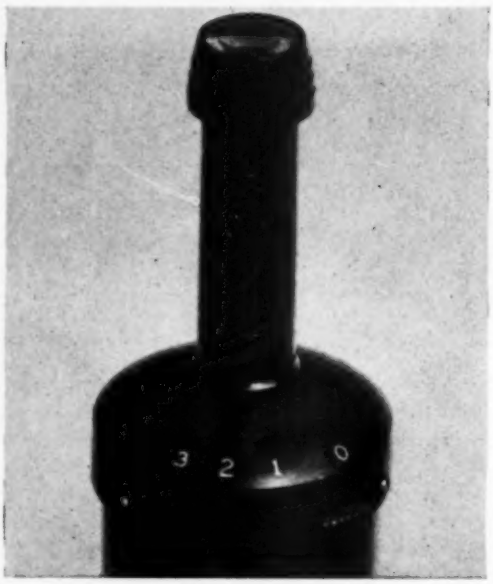
I wish not to advocate a new instrument but to suggest a simple means of securing a standard illumination upon which we can grade strong, medium, or feeble reactions, so that the oculist or internist may make a fairly accurate comparative record.

Case records may thus be made to show whether the pupillary light reflex

* Read before the Section on Ophthalmology, of the College of Physicians of Philadelphia.

is waning or improving in response to the same amount of stimulus. The earliest manifestations of interference in the afferent light tracts may be noted, and thus we may obtain precise information leading to suspicion of early cerebrospinal disease.

Working one inch from the eye, the light which would cause a prompt reaction by the average normal eye (based upon one hundred eyes with normal vision and no pathological changes, and tested under varying degrees of daylight and darkness in the examining room) was arbitrarily selected at approximately thirty-five foot candles.



Standard light for pupil reaction (Lehrfeld). Rheostat (in dry battery container) arranged to give 10 foot candles at 1, 35 foot candles at 2, and 50 foot candles at 3. Lens in light cap has focus of one inch.

The instrument which was prepared under my directions will give three measurable amounts of light, ten foot candles, thirty-five foot candles, and fifty foot candles. The battery selected will give a ten foot candle light for seven continuous hours before it begins to fail. After using the instrument for a while one becomes accustomed to the minimum light of the instrument, and as soon as this becomes dull the battery must be discarded. In average office work, the equivalent of seven continuous hours may be about two weeks. If the pupil reacts to the minimum ten foot candle light the reaction may be designated as plus three; if it reacts to the thirty-five foot candle or medium light, and not to the ten foot candle light, plus two; if to the fifty foot candle light only, plus one; and if it does not react to the last it is recorded as inactive to light.

This is a preliminary report, to be supplemented later by a description of another instrument constructed with a voltmeter for use on the house current. The second apparatus will be constant and accurate at all times, in constrast with the hand instrument, which must necessarily vary. This variability does not, however, interfere with the practical use of the instrument.

1321 Spruce street.

AN OPTICAL ILLUSION DUE TO CHROMATIC ABERRATION

F. H. VERHOEFF, M.D., F.A.C.S.
BOSTON

Frequently I have observed that letters of different color printed upon white paper appear to be at different distances—red letters appear further away than green or blue. The illusion occurs in distant vision also, for instance, when illuminated signs are looked at. If the background is black instead of white, the illusion is reversed, red letters now appearing nearer than blue. If a circumference is drawn in red ink upon white paper, and within this a smaller circumference in blue ink, the appearance of a cone pointing towards the observer is produced. Upon black paper, the cone is reversed.

I have found that many but not all individuals can observe this illusion. If an individual with good stereoscopic vision is unable to observe it with unaided eyes, he can readily observe it if a prism of two prism diopters is placed base in before each eye. If the prisms are placed bases out, the illusion is reversed. The illusion can also be pro-

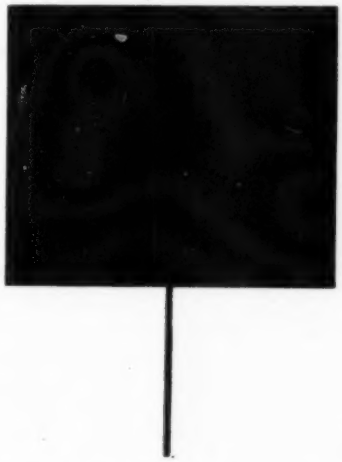
duced by employing two large pinholes, one before each eye, decentered inward or outward as desired.

That the illusion is a true stereoscopic effect is proved by the fact that it does not occur when one eye is excluded. The only possible explanation is that it is due to chromatic aberration and a decentered optical system. In many if not most individuals, sufficient optical eccentricity to cause the illusion is inherent in one or both eyes. In some it is produced by the wearing of glasses which are decentered with respect to the eyes.

The explanation is obvious in the case of red and blue lines upon a black background. If, using one eye only, a vertical line is viewed the upper half of which is red and the lower half blue, the line will appear continuous if the optical system of the eye is centered. If the optical system is decentered inward, the retinal image of the red line will be situated further temporally than that of the blue line, since red is less refracted than blue light. When both eyes are used, there will be a slight disparateness in the retinal images of the red or blue line, such as to cause the red line to appear the nearer.

The explanation of why the illusion is reversed when the colored lines are upon a white background is not quite so simple. The white background may be looked upon as composed of a red, and a complementary component comprising the remainder of the visible spectrum, and the red line as a defect in which the complementary component is lacking. In the retinal image a lateral shift of the field due to a decentering is manifested only by change in position of the defect in the complementary component, since the red component is uniform over the whole background. The defect appears as a red line, because wherever situated it permits the red component to show. Similarly, apparent shifting of a blue line is really due to shifting of the image of its complementary component comprising the red end of the spectrum. Thus, if each eye is optically decentered inward, the images of the red line are displaced nasally with respect to those of the blue line, so that the red line appears further away.

The opposite effect produced by decentering when the background is black from that when it is white is strikingly demonstrated when a vertical red line, the upper part of which lies upon a black, and the lower part upon a white background, is viewed. When viewed with both eyes, to most



An optical illusion due to chromatic aberration (Verhoeff): When viewed with both eyes, at the usual reading distance, the part of the red line on the black background appears nearer, to most observers, than the part on the white background. The illusion is exaggerated if two two-prism-diopter prisms are held bases in, one before each eye; and it is reversed if the prisms are held bases out. If, using one eye only, the figure is viewed through a pinhole about one mm. in diameter, and the pinhole is moved from side to side, the upper and lower parts of the red line appear to move in opposite directions.

observers the line upon the black background appears the nearer. When viewed monocularly, through a one millimeter pinhole which is moved from side to side, the eye being properly focused, the upper and lower parts of the line will be seen to move in opposite directions. Upon a red background, for reasons now obvious, black letters appear nearer than white letters.

Another fact, I believe not hitherto pointed out, is explained by the foregoing considerations, namely, that to

obtain a sharp image of a red line upon a white background the eye must be focused, not for red, but for green light.

The illusion here described is probably not entirely without practical importance. In the case of paintings, and in the use of binocular optical instruments, it may give rise to false ideas of perspective. As a matter of fact, in viewing stained sections with a binocular microscope, I find that under certain conditions the perception of relief can be exaggerated, abolished, or reversed, by changing the distance between the oculars.

82 Commonwealth avenue.

SOCIETY PROCEEDINGS

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Section on Ophthalmology

January 19, 1928

DR. C. E. G. SHANNON, chairman

Pseudoneuritis

DR. WARREN S. REESE exhibited two cases of pseudoneuritis. The first was in a girl of fourteen years whose discs were elevated from two to three diopters. This elevation, unlike the usual type of pseudoneuritis, extended for some distance away from the disc and came down gradually to the retinal level. There were no definite signs of inflammation or vascular disturbance. The fields were normal except for some enlargement of the blind spots. There was myopia of one and one-half diopters. From the history, it seemed possible that she might have been hyperopic originally.

The second patient was the father of the girl. He had a convergent squint and exhibited the usual type of pseudoneuritis, the left disc also showing a small patch of drusen.

Lupus

DR. REESE also showed a colored man with a large, dark, somewhat scaly lesion of the left lower lid. It extended to the bridge of the nose and was nodular at its periphery. The left eye presented numerous balloon-like constrictions of the conjunctiva and the fornices were much shortened. The cornea was practically concealed by redundant overhanging conjunctiva. The case looked like one of lupus, but the bulbar involvement was a very unusual feature.

Epithelial dystrophy of the cornea

DR. H. MAXWELL LANGDON reported the case of Mrs. M. E., aged thirty-two years, who had first been seen on May 18, 1928. She had had irritable eyes for a year, with considerable lacrimation and photophobia, but no pain. Her vision was blurred and some glasses which she had obtained when the trouble first started did not help her. She had been working very hard, not resting well, and had lost ten pounds in weight. There was no cough or dyspnea. Her bowels were regular and there was no headache or vertigo. She did not use alcohol. She had two healthy children and had had no miscarriages. Heart, lungs, abdomen, and throat were normal. Blood pressure was 110:65. The urine had a specific gravity of 1000, no albumin or sugar. Her diet was peculiar in that she never ate butter or eggs, nor drank milk. Her vision was 5/10 in each eye, which correction of her hyperopia and astigmatism did not approve. Both corneas showed irregular small gray blebs of the epithelium, arranged in an irregular, horizontal band across the central portion of each eye, about eight or ten in number. Bowman's membrane was not involved. The conjunctivas were slightly injected, but there was no ciliary injection. The anterior chambers, pupils and irides were normal. Tension was 18 mm. in each eye. Except for the hazy areas in the corneas, the media were clear and the fundi normal.

She was given a boric and holocain lotion, a tonic of iron, quinine, and strychnine, and a teaspoonful of cod liver oil t.i.d., and milk and butter were added to her diet list. In a week the

corneas were distinctly better; the blebs being smaller; and this improvement continued until July 12, two months after her first visit. Corrected vision was then 5/5 and the corneas were quite clear. There had been no return of the condition. The good result was undoubtedly due to the injection of vitamin A.

Comparison of retinoscopy by the streak method and by the plane mirror

DR. MAXWELL LANGDON had made a careful study of the comparative values of retinoscopy by the use of a streak of light and by the reflection from a plane mirror. The conclusion was that the latter was the more satisfactory. (See this Journal, volume 11, page 469.)

Tucking operation for squint

DR. C. E. G. SHANNON and (by invitation) DR. WM. J. HARRISON reported fifteen cases of functional squint operated on by the tucking method. (Paper published in full in this Journal, volume 11, page 285.)

Discussion. DR. C. R. HEED thought the Harrison tucker a great improvement over the Todd, and felt that in all cases where a general anesthetic must be used the tucking method with the Harrison tucker was the operation of choice.

Syringocystoma of eyelids

DR. S. S. GREENBAUM (by invitation) read the paper on this subject published in this Journal, volume 11, page 275.

LEIGHTON R. APPLEMAN
Clerk.

SAINT LOUIS OPHTHALMIC SOCIETY

April 27, 1928

DR. WILLIAM F. HARDY presiding

Tuberculous ulcer of the sclera

DR. N. R. DONNELL presented a report of a case with a brief review of the literature.

Instrument for testing strength of lenses

DR. WM. E. SHAHAN demonstrated this instrument, about which he had read a paper at the American Ophthalmological Society (from the transactions of which a complete explanation of the instrument and of the author's work can be obtained).

Discussion. DR. MEYER WIENER said he thought Dr. Shahan's work explained much of the discrepancy between our prescriptions and the glasses with which the patient was fitted by the optician. He had recently had a patient with two pair of glasses from the same prescription, both of them shown by neutralization to be correct, one ground on a six diopter base curve, the other on a three diopter curve, and the patient was able to read 15/10 with the one, while the visual acuity was only 15/20 with the other.

Dr. Lawrence Post stated that from this work it appeared that the extra cost to the patient of some of the specially ground lenses was not justified in effective difference from the standard toric lenses.

Injections of uveal pigment in treatment of retinitis pigmentosa

DR. W. H. LUEDDE and DR. R. BUHMAN reported on the use of a serum, prepared from calves eyes, for the arrest of retinitis pigmentosa. Dr. Luedde reported its use in five cases during the last seven years. In two cases, central vision was apparently improved, but in two others it had remained practically unchanged. In one early case, with central vision entirely normal, defects in the visual field were apparently eliminated by use of the serum. Dr. Buhman described the method of preparing the serum for hypodermic injection. Publication in full is to be delayed until additional evidence can be secured by use of the preparation in other cases.

B. Y. ALVIS,
Editor.

SOCIETY OF HUNGARIAN OPHTHALMOLOGISTS

(Gesellschaft der ungarischen Augenärtzte)

Twentieth annual meeting, Budapest, June 9 and 10, 1928

Treatment of tabetic optic atrophy

1. DR. KONRAD ALBRICH discussed the principal hypotheses: inflammatory

theories, as maintained by Stargardt, Gennerich, and Behr; and the theory of general toxic effect. He came to the conclusion that the inflammatory symptoms in the meninges or in the optic nerve were not in harmony with the atrophic nerve changes, being found alike either in the presence or in the absence of nerve atrophy. The views as to treatment also differed. Antiluetic treatment, according to most authors, was without effect or actually injurious. Noteworthy results were obtained by endolumbar methods, with endolumbar injection of air, with malaria treatment, and in many cases with phlogetan. A final decision could not be reached, since in most cases the period of observation was too short. Cautious trial was advisable in view of the bad prognosis. The patients should be given general tonic treatment.

2. Dr. Alexander Fazakas regarded the treatment of tabetic optic atrophy, based upon the latest histological and bacteriological investigations, as being certainly not hopeless. Because of the "hematoencephalic barrier", medicaments could not be brought to the desired region. The administration of specific substances by the old method and the old routes is not injurious, but is useless. The obstruction of the hematoencephalic barrier must be reduced, so that in this way medicines may more easily reach the parenchyma of the nervous system. In the eye clinic in Debreczen, according to the proposal of Fazakas, a mixture of neosalvarsan and novasurol has been combined with endolumbar injection of air (Bingel), injecting the drug intravenously. In this way an aseptic meningitis has been produced. The speaker reported as to eight cases, in half of which measurable improvement had been observed; and in his opinion also the cysternal administration of salvarsan in small doses (0.5 to 4 milligrams) is not to be disregarded.

3. Dr. Julius Fejer reported as to the treatment of optic atrophy with retrobulbar injections of atropin, according to the method of Samkovskii. Five cases had been so treated. In two cases he had seen positive improvement both in visual acuity and in the visual fields, while in the remaining cases he obtained no results. The dose of atropin was 0.4 c. cm. of 1 to 1000 solution increased to 1 c. cm. The treatment consisted of twenty injections. Disagreeable symptoms had never been observed.

Industrial compensation

1. Dr. Beza von Vajda discussed the calculation of injurious results of ocular accidents from the point of view of stereoscopic vision. These consequences related mainly to diminution of visual acuity and loss of stereoscopic vision. The visual acuity can be expressed in figures, while stereoscopic vision is to be determined from the point of view of whether the injured person carries on his work by means of three or two dimensions; for example the work of a sculptor demands good binocular vision in three dimensions, while painting can be carried on very well with vision of two dmensions. In the speaker's opinion, for every occupation that degree of visual acuity should be determined with which the occupation can be satisfactorily carried on.

1. Dr. Ladislau von Blaskovics emphasized the need for individualizing in the judgment of each case. He regarded the Maschke table commonly used in central Europe as inadequate, and would divide injured persons into several categories, according to whether the occupation could be carried with good visual acuity without stereoscopic vision, with excellent binocular vision in the presence of lower visual acuity, or only with good visual acuity combined with good binocular vision.

Julius Fejer

ROYAL SOCIETY OF MEDICINE, LONDON

Section of Ophthalmology

June 8, 1928

Mr. Ernest Clark presiding

Anomalies of the eye

Mr. Norman Fleming showed a patient with a congenital anomaly simu-

lating retinitis proliferans. During the past year the right eye had been noticed to diverge painfully; the vision in that eye was 6/60, that of the left being normal. In the fundus was a marked band of fibrous tissue, stretching from the disc in the lower part of the fundus, and apparently adherent to the fundus. There were also two other bands, and a mass of tissue adherent to each. There was no history of an injury having been sustained, either at birth or since: the birth was a normal one, without instrumentation.

Arborescent cataract

MR. J. D. M. CARDELL showed a case of this trouble. The man, aged seventy years, had blue-dot cataract and crystalline deposits in the lens. The formation of crystals started from the posterior part of the lens and came forward in the substance of the lens in a tree-like formation.

Iridocyclitis with folds in Descemet's membrane

MR. HUMPHREY NEAME sent a case of iridocyclitis, which had very fine keratitis punctata on the lower cornea, both right and left; in the right was a complete circle of radiating folds of Descemet's membrane.

Bursting of artificial eye

MR. MONTAGUE HINE described a case in which an artificial eye had burst in the socket and the orbital tissue had got sucked into the interior of the prothesis. The case emphasized the fact that there was a negative pressure inside an eye when it was blown while hot, and, on the air cooling, a partial vacuum was formed inside. This woman was cooking, when she felt something explode in her face. She tried to get the artificial eye out, but did not succeed, and the orbit became painful. She went to the ophthalmic hospital, but the house surgeon there also failed. Mr. Hine then saw the case, and, after anesthetising the patient, he passed a probe to the back of the eye from below, thus displacing the tissue which blocked the hole, and when air was let in there was an immediate releasing of the eye.

Neurofibromatosis of the eyelid

MR. MONTAGUE HINE showed and described a case of this disease. He came to the conclusion that instead of trying to save the upper lid it would be better to remove the eyelid, eyeball, and some conjunctiva and orbital tissue, and then suture the lids. This was done.

DR. HARVEY WYATT reported that the under surface of the lid showed chronic inflammation, and this was communicated, by constant contact, to the lower lid, which was ulcerated. Beneath the skin of the upper lid and in the neighborhood of the meibomian glands were extensive areas of small round cell infiltration, and a few giant cells. The blood vessels were numerous, very congested and dilated. There was much thickened fibrous tissue from the nerve sheaths. The meibomian glands contained degenerated and vacuolated cells. In the cornea the epithelium was regular and thin, with somewhat flattened cells; the fibers of the substantia propria were also rather atrophied and thin. Iris and ciliary body showed changes due to chronic inflammation. Dr. Wyatt was unable to see any hypertrophied end organs, such as Mr. Treacher Collins had described in his case. The disc was cupped.

Discussion. MR. FRANK JULER congratulated Mr. Hine on the result in his case. He showed pictures of a man whom he had exhibited at the Section in 1920. There was then marked neurofibromatosis of orbits and lids and in the temporal and occipital regions. Mr. Juler had dissected away much redundant tissue from the eyelids, and the man had been able to carry on until recently. He had now come to have something more done, as there had been a further increase of the neurofibromatous condition. Mr. Juler asked whether Mr. Hine had much hemorrhage in his case. In Mr. Juler's own case there was great hemorrhage, and because of that he did not do so much as he had intended. The patient had buphthalmos in 1920, but as there was vision the speaker did not feel justified in removing the eye. Today there was scarcely any perception of light, and,

as he was also having some pain in the eye, Mr. Juler thought he ought to advise excision. Today he found, by the corneal microscope, a number of blood vessels spreading from the periphery over the cornea, also a thin line which might be corneal nerve or a line of cells such as Mr. Hine described.

MR. TREACHER COLLINS described what he had found in two cases of similar kind. At the time the cases were exhibited he had drawn particular attention to the condition of the nerves in the eyeball itself. There were gray streaks in the cornea, a series of elongated cells, which he took to be a new growth around the nerve fibers; it was really connective tissue, not a growth of nerve fibrous tissue. When he examined the buphthalmic eye he found the angle closed, as if it had been an ill-developed angle. He advised removal of the eye in Mr. Juler's case; in that case there was a very deep anterior chamber.

Lysozyme

MR. FREDERICK RIDLEY said that lysozyme, which was described by Alexander Fleming in 1922, was an enzyme capable of destroying not only nonpathogenic bacteria, but also most of those pathogenic to man and lower animals. It was found in all animal tissues and tissue fluids, and in most secretions. It was present in a high degree of concentration in tears, polymorphonuclear leucocytes, and the nasal mucus and the sputum of man. Fleming showed that if a drop of nasal mucus were placed on the surface of an agar plate, the micrococcus lysodeicticus would not grow in that area, even when thickly planted.

In the pure state, lysozyme was a yellow amorphous powder, easily soluble both in water and in saline solution. It was not destroyed by desiccation, below 40° C., and retained its potency for many months. Temperatures above 75° C. destroyed it in a short time. It acted efficiently at body temperature, but most rapidly at 60° C. It was quickly destroyed by any considerable quantity of free alkali or acid. It would not pass through parchment or collodion membranes, so it could be purified by dialysis. Wolff, of Holland, had shown it gave none of the reactions for protein. It was probably stored in the body by means of fixation by the fats. Following its injection into an animal no anaphylactic phenomena were observed. In high concentrations, lysozyme could kill pathogenic organisms without obvious lysis. The excretions in which lysozyme was not found were cerebrospinal fluid, urine, and feces. It was present in turnips, white of egg, fish, and fowl. As compared with white of egg, tears had the advantage that they contained only a trace of protein.

A fall in the lysozyme concentration of the tears always accompanied epiphora, if that condition had persisted longer than a few hours. In five cases of foreign body retained in the eye more than three days, the concentration in the affected eye was less than forty-five per cent, the fellow eye being normal in this respect. In sixteen cases of conjunctivitis, some acute, some chronic, the infected eye showed a reduction of lysozyme to between thirty and sixty per cent, the other eye in each case usually being normal. In six cases of phlyctenular disease and in four of recent interstitial keratitis, the lysozyme titer of each eye was below fifty-five per cent of normal, possibly owing to the associated general ill health. In five cases of interstitial keratitis which had received thorough general treatment, the titer in each eye was over eighty per cent.

Concerning the power of lysozyme as an antiseptic, Mr. Ridley showed that one teaspoonful of the pure substance could bestow lethal power on M. lysodeicticus in one hundred million gallons of normal saline. The tissues tolerated lysozyme without appreciable reaction in a concentration as great as forty times that found in tears, hence the importance of the substance as an antiseptic was immense.

DR. ALEXANDER FLEMING (the discoverer) spoke briefly in support of the thesis, and showed that the old idea

that infection was washed away by secretions, such as tears, was not adequate, the antiseptic power of these secretions providing the key to the process. The process of intercellular digestion of microbes in the process of getting rid of them had not yet been minutely worked out.

MR. LESLIE PATON described the circumstances which had led him to induce Mr. Ridley to undertake the research, and spoke of the far reaching effect of the knowledge on medical work. Col. A. E. Lister and the President also spoke, and Mr. Ridley replied.

NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

Meetings of May 16 and June 18, 1928

J. LESLIE BRYAN, chairman

Pituitary tumor

DR. M. M. CULLOM presented the case of Mrs. J. I., aged forty-six years, who had had continual headache for fourteen years and failing vision for more than five. Vision in the right eye was too poor to be recorded, and that in the left was 20/200, with complete destruction of the nasal field. X-ray showed a large pituitary tumor which had destroyed the anterior and posterior clinoid processes. Operation was refused.

Hereditary retinitis pigmentosa and impaired hearing

DR. HILLIARD WOOD reported three consecutive generations in one family which included several cases of retinitis pigmentosa and impaired hearing with other congenital defects. In the first generation was W. H. J., with extremely poor hearing. He had a niece who was a dwarf in size. His wife, L. J., while herself normal, had one sister who was deaf in old age; a brother who was deaf and had a cataract in one eye; and two nieces who had bad vision. Of the six children born to the J. couple three showed pronounced retinitis pigmentosa and almost total loss of hearing, with better air than bone conduction. Routine laboratory work, including blood Wassermanns on these three, was negative. One of these three had a daughter, now aged fourteen years, who had been a cretin since infancy. Dr. Wood presented the three defective members of the second generation.

Discussion. DR. M. M. CULLOM said that the interesting features were the association of deafness with the retinitis pigmentosa and that there were defects on both sides of the family. Where both sides have defects the chances for the offspring being afflicted are doubled. He believed the cases shown to be clearly cases of retinitis pigmentosa.

DR. GUY MANEES asked if there was any history of intermarriage.

DR. HILLIARD WOOD replied that there was none.

DR. ROBERT SULLIVAN said he thought the wise thing from a social standpoint for these people was never to marry as the succeeding generation's defects were likely to be multiplied progressively.

Ocular contusion followed by glaucoma

DR. W. E. WILKERSON presented the case of C. W., white male aged thirty-eight years, who had come to his office with a record of having been flipped thirty minutes previously with a rubber band which struck him on the lids of the right eye. Examination showed the lids of the right eye to be swollen and red. Only a moderate amount of pericorneal injection was present. The cornea had a steamy appearance and the lower third of the anterior chamber was filled with blood. Just above the hyphema a grayish-white irregular mass was seen, apparently protruding from the lower portion of the anterior chamber. The pupil was irregular in size and was pulled upward. The patient was sent to the hospital for treatment and observation. Two hours later the hyphema had disappeared, and the mass in the eye proved to be iris torn from its attachment between the positions of six and one o'clock. Injections of aolan were given, and one per cent of atropine sulphate solu-

tion and hot compresses were prescribed. The following day the eye was looking much better than one reasonably could have expected. The improvement continued for four days, after which more hyphema was noted, and there was a marked increase in pericorneal injection. Hot compresses were discontinued and cold compresses were substituted. A saturated solution of potassium iodide was prescribed, beginning with eight drops after each meal. On the fifth day after the accident the patient was complaining of severe pain in the eye. The anterior chamber was completely filled with blood, and a marked increase in tension was noted. On the sixth day, with the pathological picture unchanged, Dr. Hasty was called in consultation. He advised discontinuing the cold compresses and giving calcium lactate. This was done, but the pathology of the eye did not change. Nine days after the injury the anterior chamber was entirely filled with blood. At this point he changed doctors. The treatment subsequently used was not known, but in a few weeks the eye was removed. From a pathological examination of the globe at the Army Medical Museum, the summarized report was: "Injury; intraocular hemorrhage; subacute endophthalmitis; secondary glaucoma."

It was interesting to note that so seemingly insignificant an unusual injury could have been so destructive to an eye which had been perfectly normal, so far as the patient knew. Cases of this type proved the inadvisability of positively prognosticating the end results in supposedly minor eye injuries.

HERSCHEL EZELL,
Secretary.

THE MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

June 12, 1928

DR. C. D. BLASSINGAME presiding

Essential atrophy of the iris

(1) DR. P. M. LEWIS presented C. W., colored female aged twelve years, who had been seen in the clinic of the Memphis Eye and Ear Hospital on March 13, 1928. She complained of failing sight of the left eye for the past year. Both eyes were inflamed when she was a baby, and the sight of the right entirely lost. Her mother stated that there had been no change in the appearance of the left eye for the past five or six years. It was at that time she had first noticed the moth-eaten spot on the iris of the left eye.

Examination: The right eye was a degenerated globe, having no perception of light. The left eye had a central corneal opacity, and an anterior capsular cataract. In spite of these conditions, the vision was 20/50. Lenses caused no improvement. The pupil was round, regular, and centrally located, and reacted normally. The tension of the eye was normal. There was a large area of iris having a moth-eaten appearance, down and in from the pupil. It looked as if the anterior layers of the iris down to Bruch's membrane had disappeared, leaving a grayish-yellow base stippled with numerous spots of iris pigment. This gave it something of the appearance of a butterfly's wing.

The patient had been under frequent observation for the past two months and no change had taken place in the eye. The general condition of the patient was excellent. The blood was negative for syphilis. The eccentricity of the pupil and the increase of intraocular tension met with in cases of so-called essential progressive atrophy of the iris were not present.

(2) DR. E. C. ELLETT showed photographs and drawings of a typical case of essential atrophy of the iris which had developed secondary glaucoma and bullous keratitis, wiith loss of vision. He had reported the early history ana findings of this case in the Transactions of the American Ophthalmogical Society, 1926, page 140. The eye was enucleated February 15, 1927, and he presented a section of the eyeball, the pathological report on which from Dr. E. Verhoeff was as follows:

"The specimens submitted consist of

two sections of an eye. In one section the iris is everywhere adherent to the cornea except on one side, where it is free from about one-half millimeter from the pupil. In the other section, it is adherent almost to the pupillary margin on one side, but on the other side it is adherent for a distance of three and one-half millimeters, while four millimeters of the iris is free. The adherent part of the iris everywhere shows marked fibrosis, and the free portion of the pupillary margin shows ectropion uveae. Over the ligamentum pectinatum, the root of the iris is very thin. Elsewhere the adherent iris is also thinned, but to a less degree. The appearance of this portion of the iris does not differ from that commonly seen in primary glaucoma. Such an extensive adhesion to the cornea, however, is seldom seen in primary glaucoma. The portion of the iris which is free for four millimeters shows a condition that I have never seen in primary glaucoma. Here the fibrous stroma is extremely thin, and for a short distance has completely disappeared, leaving only the dilatator muscle and pigment epithelium. At the pupillary margin there is some fibrous stroma and the sphincter muscle is intact. No patent blood vessels are seen anywhere in the iris. The stroma of the ciliary processes and the superficial tissue of the ciliary body show fibrosis. The pigment epithelium of the ciliary body shows proliferative and degenerative changes. The capillaries of the ciliary process are congested. The optic disc is only slightly cupped."

Dr. Ellett stated that most cases developed past middle life and ran a progressive course. According to Dr. de Schweinitz the cause had not been discovered. One hypothesis was that this condition was due to a neurotrophic disturbance of the blood vessels of the iris with subsequent atrophy and desquamation of cells which by obstruction of the drainage system caused secondary glaucoma.

Discussion. Dr. J. B. Stanford did not believe that the cornea in Dr. Lewis' case had been perforated, as the scar did not seem dense enough for this complication. He thought the lenticular opacity might have been a congenital cataract.

Entropion corrected by a Webster operation

Drs. E. C. Ellett and R. O. Rychener presented the case of Mrs. W.M.S., aged fifty years, who had suffered from granulated lids all her life. Ten years ago, operations on the eyelids helped the vision and the comfort of the patient for three years, but during the last seven years the suffering from trichiasis had been acute. Vision was reduced to light perception. There was trichiasis and entropion, with marked contraction of the fornices. Both eyes were inflamed, and the corneæ were opaque and vascular.

The Webster operation was done on each upper lid. The lid was everted and an incision made through the tarsus three millimeters from and parallel with the lid border. A mucous membrane graft from inside the lower lip was placed in each incision. No sutures were used. The graft took satisfactorily, with correction of the entropion.

Secondary glaucoma following traumatic dislocation of the lens

Drs. E. C. Ellett and R. O. Rychener presented the case of Mr. L.A., aged twenty-six years, who had been struck in the right eye with a golf ball, resulting in disclocation of the lens laterally. Five weeks later, secondary glaucoma developed and the lens was extracted by looping it from the vitreous. The eye healed satisfactorily and was comfortable for two weeks, when there was another exacerbation of tension and an iridotasis was done. Since then, the eye had kept fairly comfortable, although the tension remained elevated. This decreased somewhat under eserine and massage and the globe was clearing slowly.

Discussion. Dr. J. B. Blue had seen the eye when the glucoma was at its height, and had concurred in the advice of attempting to save the eye by

extraction of the lens. It was a bad looking eye before operation and was still far from well.

DR. P. M. LEWIS spoke of this case as an example of one of the dangers of golf. He had seen two other eyes after injury with flying golf balls in which the lenses had been dislocated and the choroid ruptured. Both these eyes had to be enucleated.

DR. RYCHENER, closing, agreed that the eye did not look well, but an effort was being made to preserve it because of the patient's youth and social status.

Hemorrhagic glaucoma treated with amin-glaucosan

DRS. E. C. ELLETT and R. O. RYCHENER presented the case of Mrs. F.M.D., aged fifty-five years, who had suffered acute glaucoma in the right eye four years previously, and had been operated on without return of vision. Two months before there was a thrombosis of the inferior temporal vein in the left eye, with corresponding difficulty in vision, and one week ago glaucoma had developed. The tension responded almost immediately to miotics, but in four days had risen again and it responded not at all thereafter. One drop of amin-glaucosan ten per cent solution was administered the day before, producing an intense chemosis like dionin, but having no effect on the pupil. The tension, however, was reduced from fifty Schiøtz to thirty and the eye more comfortable for twelve hours, after which the tension again increased.

Discussion. DR. P. M. LEWIS thought the prognosis was grave, as surgery was contraindicated and medical therapy was unsatisfactory.

Vossius contusion ring

DRS. E. C. ELLETT and R. O. RYCHENER presented the case of H.B., aged twelve years, who twelve days previously had been struck in the left eye with a tennis ball. There was a ring of scattered opaque dots on the central lens capsule, about three millimeters in diameter, corresponding in position to the pupillary zone, and seen best by direct ophthalmoscopy when the globe was turned to the right. The vision was 20/20.

Discussion. DR. J. B. STANFORD saw many cases of Vossius ring following industrial accidents, and had always noticed an accompanying anterior chamber hemorrhage. He believed the anterior capsular deposit was due to blood pigment rather than iris pigment.

DR. R. O. RYCHENER, closing, remarked that the theoretical explanation of this phenomenon was the sudden pressure of the iris on the lens capsule by force transmitted through the aqueous. He believed Dr. Stanford's explanation to be plausible. There had been some blood in the anterior chamber in this case.

Foreign body in the globe

DRS. E. C. ELLETT and R. O. RYCHENER presented the case of R.C.R., aged thirty-five years, who had been struck in the left eye ten days before, while hammering a piece of casting. He was advised in another city to have the left eye removed because of danger of sympathetic ophthalmia. The left eye had light perception with very poor projection, and showed a minute corneal scar below the twelve o'clock position, immediately over a posterior synechia. There was marked iritis with plastic exudate, and partial traumatic cataract, and with the x-ray a foreign body was located in the globe. Atropine had been used in treatment, and the right pupil was widely dilated, without showing any inflammatory changes in this globe. Vision O.D. was 20/70 corrected to 20/20 by refraction. It was proposed to remove the left eye.

Discussion. DR. P. M. LEWIS noticed that the light projection was especially poor in the lower temporal field, and thought there was probably a detachment of the retina. He believed the eye should be enucleated.

Keratoconus

DR. M. A. SELIGSTEIN reported the case of Mrs. E.C.W., aged forty-three years, who had been admitted to the clinic June 11, 1928, with the com-

plaint of inability to see small objects or to read without holding objects very close to the eyes. She had first noticed the onset of trouble at the age of twelve years at which time she had to hold books closer than other school children. Distant objects were blurred at this time, and she had to "squint" to see clearly. Glasses had been worn without much benefit. Bilateral iridectomy had been done ten years ago. Following operation fair vision was enjoyed for about one month. The patient then had pellagra, and was confined in the hospital for three and a half to four months, during which time vision was impaired. Upon recovery vision improved, and it was fairly good for about six months. She then noted difficulty in threading a needle. The condition had been growing progressively worse for the past nine years. At present there was photophobia to artificial light, with the other subjective symptoms of the

O.D. showed well developed keratoconus, with characteristic sagging just below the center of the cornea. Tension appeared normal to finger test. An old iridectomy was present above. There was interference with retinal reflex, probably due to lenticular opacities. The fundus was seen in spots, which appeared normal. The portions of the disc seen were normal. O.S. corneal condition similar to O.D. There was also a vertical linear scar extending from the center down toward the five o'clock position. Two small lenticular opacities were noted. Fundus O.S. was similar to O.D. The patient read with O.D. at eight inches, but was unable to do so with O.S.

The manifest refraction was O.D. —10 cylinder ax. 180°, with which vision equalled 20/50. O.S. —6. cylinder ax. 180° combined with —6. cylinder ax. 75° improved vision according to patient's statement, but did not give ability to read 20/200. With +4. sph. added to each eye vision equalled Jaeger three at eighteen inches. Without correction vision O.D. was 4/200; O.S. 3/200.

Discussion. Dr. J. B. Stanford remarked this might be a case for a Webster Fox operation, but thought the prognosis was poor.

Dr. J. B. Blue had seen Dr. Fox operate on two such cases with excellent surgical results, and thought that Fox was obtaining visual results as well.

Dr. P. M Lewis thought it interesting that the patient gave a history of pellagra, and he considered the infantile nutritional factor of importance. He also thought foci of infection should be eliminated.

Lime burn

Dr. D. H. Anthony reported the case of a male negro, plasterer, who on May 19, 1928, had spilled lime in his right eye, and who five days later was admitted to the out-patient department of the Memphis Eye, Ear, Nose and Throat Hospital for treatment. On examination practically the entire lower cul-de-sac was found obliterated, and fresh adhesions had occurred between the lower lid and the globe except a small area at the temporal side of the cul-de-sac. The lid and the globe were separated with a strabismus hook, leaving a large bleeding surface on the lower half of the globe and inside the lower lid. Adrenalin was applied to the bleeding surface, and the small end of a hen egg film was placed over the globe so that the egg film would cover the cornea and bulbar conjunctiva. The egg film was changed once a day, followed by irrigation with boric acid solution. This treatment was administered for five days. There was an abrasion of the epithelium of the lower half of the cornea which had healed at the end of five days except for a small area about the six o'clock position. This corneal ulcer was found to be infected with xerosis bacillus. The ulcer was cocainized and two per cent silver nitrate applied, and the patient was put on 0.25 per cent zinc sulphate solution. The cul-de-sac had healed sufficiently to permit omission of the egg film. Since then the patient had shown gradual improvement, and the cornea and the cul-de-sac were in apparently good condition.

R. O. Rychener,
Secretary.

American Journal of Ophthalmology

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THE ILLUMINATION OF TEST CHARTS

A reasonable uniformity of standards has been attained in the Snellen test charts issued by various manufacturers. But in the matter of lighting much lack of uniformity exists, so that rather widely varying statements of the visual acuity of the same patient may be obtained from different opthalmologists.

Some years ago the present writer was consulted by a general physician who was puzzled because in his hands an insurance candidate failed to indicate a satisfactory visual acuity rating, although there was no reason to suppose that his eyes were other than normal. The general physician in question had been using a test chart which, without artificial illumination, hung on a wall directly alongside an outer window, while the patient whose visual acuity was being recorded sat facing both window and chart.

This is an extreme instance of ignorance of basic principles in one who had not made a special study of physiologic optics. Yet conditions not much more rational than these are to be found in a few important public clinics; and the system in use for illuminating Snellen charts in the private consultation rooms of some ophthalmologists is distinctly open to criticism.

Sometimes the large letters at the top of the chart are much more strongly illuminated than the smaller letters at the lower end of the chart, although the latter are more frequently in use and in most cases of more critical importance in the estimation of visual acuity. A transilluminated chart may be so lighted as to throw a small area into strong relief while the re-remainder of the chart is poorly displayed.

R. S. Burnap and E. C. Jackson,* engineer and physician respectively, working for the General Electric Company, have undertaken a systematic investigation of this subject. They found

* The results were reported, with tables and excellent illustrations, in a paper read before the Twenty-second Annual Convention of the Illuminating Engineering Society, Toronto, Canada, September 17 to 20, 1928.

that, in the offices of thirty ophthalmic physicians in New York, Newark, and Philadelphia, the average brightness value of the Snellen charts varied from four to 190 foot-lamberts. In a certain instance, one point on a chart had a brightness value of sixteen foot-lamberts, while four inches away from this point, on the same chart, the brightness value rose to 146 foot-lamberts.

There is no general agreement as to whether it is better to test the patient's vision in a room in which the special illumination of the test chart is supplemented by general lighting of the room, or whether a darkened room in which the sole illumination is applied to the test chart is to be preferred, although Ferree and Rand have demonstrated that a patient viewing the chart in a brightly lighted room shows better results as to acuity than a patient reading the same lighted chart in a room which is otherwise in darkness.

A very few ophthalmic physicians were found to have the wall behind the chart black, so that within the visual angle none of the background behind the chart reflected any appreciable amount of light to the patient. But the majority of offices had white ceilings and the natural buff or gray walls of their rooms as backgrounds for the charts.

The majority of translucent charts showed a marked lack of uniformity in illumination, blotches of light directly in front of the concealed lamps being interspaced with dark areas.

The tabulated results clearly indicate that, within certain limits, the record of visual acuity increases with illumination. The "curve slope" denoting increase in acuity is steeper on the lower values of illumination than on the upper; indicating that, after a certain level of illumination is obtained, further increase of acuity comes less rapidly. The change in acuity was more rapid for values below seventy-five foot-candles, and a change of illumination from two to one hundred foot-candles showed a change in reading ability of one whole line of the Snellen chart.

Burnap and Jackson recommend a standard of one hundred to one hundred and twenty-five foot-candles for ordinary testing. At this range the relatively small changes in illumination will not produce noticeable variations in the acuity record. This range is well above ordinary room illumination, and is therefore not seriously affected by variations in general lighting. It can also be obtained without the use of complicated equipment or unusual sizes of lamps.

A further recommendation that the illumination shall be over the whole chart is open to certain exceptions. Some patients read more easily the test letters to which their attention is for the moment directed, if a good deal of the rest of the chart has a more subdued lighting. There is therefore something to be said in favor of an illumination which is reasonably concentrated and at the same time approximately uniform as applied to not more than a half of one of the longer charts.

Such a limited lighting, in its primary adjustment, is best applied to the smaller letters; and, to be entirely satisfactory, such an arrangement must allow of readjustment so as to concentrate the illumination upon the larger letters when dealing with low visual acuity. With direct lighting this can readily be accomplished by lowering the chart so as to bring its upper end (in the usual sort of Snellen chart) into proper illumination; and an extremely convenient way to accomplish this is by a simple system of pulleys which allows the examiner, from his seat by the patient, to raise or lower the test chart or one of several test charts.

The report by Burnap and Jackson includes accurate specifications, with careful drawings, for the installation of an adequate and uniform system of illumination, by either transmitted or direct light. Broadly speaking, these include in each instance reflector chambers and a battery of four sixty-watt frosted or four fifty-watt clear tungsten lamps.

W. H. C.

OPHTHALMIC TEACHING IN GREAT BRITAIN

For the study of ophthalmology in preparation for special practice, Great Britain offers two important advantages. The teaching is all done in English; and the practical bent of the British mind is shown in the selection of topics, and in the point of view from which each subject is presented. But less is known in America about such opportunities for study in London, than about the facilities afforded by Vienna, Berlin, Paris, Zurich or Barcelona.

The annual "Students Number" of the Lancet, August 25, 1928, gives an excellent account of medical education in general in Great Britain; and more concerning graduate teaching in ophthalmology than is to be found in the corresponding "Educational Number" of the Journal of the American Medical Association.

Diplomas in ophthalmic medicine and surgery are granted by Oxford University, as well as by the Conjoint Board of the Royal College of Physicians (London), and the Royal College of Surgeons (England). At Oxford the examinations are held annually in March, and are open to registered medical practitioners who have pursued at Oxford a course of study in ophthalmology over a period of at least two months, and who have attended a twelve months recognized hospital course.

The examinations of the Conjoint Board are held in February and July. Part I comprises anatomy and embryology of the visual apparatus, physiology of vision, and elementary optics. Part II comprises optical defects, ophthalmic medicine and surgery, and pathology with special reference to ophthalmology. The examination in each case is written, oral, and practical or clinical. Candidates may only enter for part II on completion of a year of special study in ophthalmology, having first obtained a registrable diploma or a degree in medicine and surgery.

In addition to the above formal diplomas, a few universities grant the degree Master of Surgery. In the University of London the examination for this degree may be taken in ophthalmology, and the same may be done at Victoria University, Manchester.

The great hospital of London for ophthalmology, and one of the greatest in the world, is the Royal London Ophthalmic Hospital, "Moorfields", from 1804 to 1899. Special five-month courses are given, beginning in October and in March. A certain fee entitles the student to all lectures and classes, and to examinations for the hospital certificate. Students become eligible to the office of house surgeon, and to that of clinical or junior assistant.

Beside Moorfields, there are in London the Royal Westminster Ophthalmic Hospital, the Royal Eye Hospital, and the Central London Ophthalmic Hospital, all planned and prepared for teaching ophthalmology, and with university or medical college affiliations offering staff assistantships to their students. Nor is the teaching of ophthalmology confined to London. In some smaller medical centers there are house surgeons whose duties are partly or entirely with eye, ear, nose, and throat cases, as at Norwich. At Brighton there is an ophthalmic department. At Exeter, in the West of England Eye Infirmary, there is a ward set apart for babies suffering from infectious eye disease.

In Edinburgh the University offers its facilities for graduate study. Here Argyll Robertson and George Berry spent their professional lives, and their work is carried on by worthy successors. The Eye Ear and Throat Infirmary of Edinburgh has given to a smaller number of students the type of instruction and opportunities that made Moorfields famous. Clinical lectures and classes provide the students with daily instruction. The University of Glasgow takes part in both undergraduate and graduate instruction. Glasgow has three great infirmaries with eighteen hundred beds. The Glasgow Ophthalmic Institution and the Glasgow Eye Infirmary offer clinical op-

portunities, well arranged and utilized.

It is time for Americans and English-speaking medical men throughout the world to recognize the enormous opportunities for ophthalmic education that are offered in Great Britain.

E. J.

PHLYCTENULAR OPHTHALMIA

Before the discovery of the tubercle bacillus, phlyctenular disease was known as a form of scrofulous ophthalmia, and occupied an important place in the statistics of conjunctival and corneal diseases. The leading manifestations of "scrofula", tuberculosis of the bones and of the lymph glands, have been accorded their place in the bacterial classification of diseases; but uncertainty and confusion still prevail as to the etiology and essential character of phlyctenular ophthalmia.

Long search by skilled bacteriologists shows that the tubercle bacillus is only rarely, and by accident, present in the characteristic lesions. The histopathology of the phlyctenule is not that of a tubercle. The occurrence of a tuberculin reaction is not constant in children who suffer from phlyctenular conjunctivitis or keratitis; perhaps not more general among them than among children of similar circumstances who do not have phlyctenules. The phlyctenule frequently contains staphylococci, is very often associated with eczema of skin surfaces, and resembles some eczematous lesions. A form of rhinitis is very generally associated with phlyctenular ophthalmia, and treatment of the rhinitis often cures the eyes. Errors of diet figure very largely in the etiology of this disease, and a correct diet and general hygiene commonly cure it. Even relief from eyestrain has done little to cure or throw light on this obscure disease.

Here is a problem in pathology and treatment that has not been solved by investigation along the usual scientific lines. Yet the condition is common and important enough to challenge repeated clinical and statistical research by a large number of practising ophthalmologists. Such a research has been undertaken in the clinic of Professor Grönholm in Helsingfors, Finland, by Werner, who publishes his results in the Acta Ophthalmologica, volume 6, page 132. Parallel studies were made of phlyctenular eye diseases and of trachoma, both as to seasonal frequency and as to the number of cases which presented themselves in the course of twenty-five years. The material includes 3405 cases, or 5.7 per cent of those seen at the clinic referred to. Werner concludes that the frequency of the phlyctenular eye diseases in Finland increases toward spring, after the long winter, and decreases during the summer and autumn. The favorable effects of the summer make themselves felt even as late as February of the following year. This corresponds to the seasonal variations of tuberculosis. The frequency of trachoma is not subject to seasonal variations.

During the last twenty-five years, phlyctenular eye diseases seem to be diminishing in Finland. Both the absolute number of cases and the relative frequency show an important decline, and this decline corresponds fairly accurately to the decline in trachoma cases. But while the trachoma percentage has fallen continuously, the falling off in the number of phlyctenular cases has been interrupted by a moderate increase, partly due to a severe influenza epidemic. As a cause of amblyopia the phlyctenular eye diseases are probably at least as important as trachoma, but as a cause of blindness they are much less important.

Similar studies made in other places and with regard to other aspects of such diseases would probably improve our understanding of them. Studies of this kind are not spectacular, but they may be permanently helpful and very creditable.

E. J.

THE AMERICAN JOURNAL OF OPHTHALMOLOGY

At Saint Louis, just before the recent annual meeting of the American Academy of Ophthalmology and Oto-

laryngology, the directors of the Ophthalmic Publishing Company met to consider, among other matters, whether any change of policy on their part was called for by the decision of the American Medical Association to assume publication of the Archives of Ophthalmology founded by Dr. Herman Knapp and hitherto continued by his son Dr. Arnold Knapp. The directors decided that no change in the policy of the American Journal of Ophthalmology was necessary or advisable, and that the various departments of the Journal should be continued on their present basis. Later in the same day a well attended meeting of the stockholders of the Ophthalmic Publishing Company was held, and at this meeting the decision of the directors was approved by unanimous resolution.

(See also statement on the last page of the present issue.)

BOOK NOTICES

Studien zur Wirkungsweise der Filtrationsnarben bildenden Glaukomoperationen, mit besonderer Berücksichtigung der Iridenkleisis antiglaukomatosa Holth. (Studies as to the mode of action of glaucoma operations which develop filtration scars, with special reference to Holth's antiglaucomatous irididencleisis). By Arnold Pillat. Sixty-five pages, four illustrations. 1928, S. Karger, Berlin. Paper cover, price 3.80 marks.

This reprint of part nine of the Abhandlungen aus der Augenheilkunde und ihren Grenzgebieten gives a very careful analysis of 170 cases of glaucoma, operated upon by iridencleisis with meridional iridotomy, observed during a period of from at least one to seven years, with description of technique, accidents, and late sequels, in which there was not one case of late infection. Out of 72 eyes with chronic glaucoma, in 64 (87 per cent) the results were good, in 8 (13 per cent) poor; of 9 cases of absolute glaucoma, in 6 (66 per cent) good, in 3 (33 per cent) bad; 11 cases of acute glaucoma in 10 (91 per cent) good, in 1 (9 per cent) bad; of seven cases of secondary glaucoma, in 57 per cent good, in 43 per cent bad. Four globes enucleated on account of expulsive hemorrhage, sympathetic ophthalmia, lens subluxation, incarceration of ciliary processes, and painful iridocyclitis are described anatomically.

Iridencleisis is indicated in all forms of chronic primary, but especially in inflammatory, glaucoma; while it is contraindicated in glaucoma with iridocyclitis, extensive posterior synechiæ, or narrow iris, and in all secondary glaucoma. It is superior to Elliot's trephining and Lagrange's sclerectomy by giving less freely fistulizing scars and thus essentially diminishing the danger of late infection. Its action consists in creating a new outlet for the aqueous along the incarcerated iris, and perhaps freeing the lower sinus by drawing the iris upward.

C. Zimmermann.

Die Lichtbehandlung in der Augenheilkunde (Light treatment in ophthalmology). A. Birch-Hirschfeld, director university eye clinic, Königsberg, and W. Hoffmann, chief of clinic. 112 pages, thirty-four illustrations, partly multichrome. Berlin, Urban and Schwarzenberg, 1928. Price 12 marks.

This book will be heartily welcomed, as it embodies the experience of the authors, gained within the last ten years, on a very large clinical material after careful preliminary experimental and pathological studies. It is mainly intended as a guide and adviser to the ophthalmologist in the therapeutic field. Hence the points of more theoretical and scientific interest are briefly discussed in an introduction on physical processes as basis for the investigations of light therapy, and on the biological, physiological, and pathological effects of light, while everything important for practical application of the method is very elaborately treated, e.g. technique, chiefly as developed by

Birch-Hirschfeld, and the fields of employment of the method in anatomical order. The chief principle must be to work with sufficient but not excessively strong doses. Too weak doses may do harm, e.g. by not sufficiently destroying infectious agents, too strong doses by lowering the resistance and the regenerative power of the normal tissue cells. Diseases of the cornea furnish the most important field for light therapy on account of the bactericidal action of ultraviolet rays and their stimulating effect on tissue regeneration. This is the best illustrated by the good results obtained by the authors in 571 earlier cases of serpent ulcer with only 6.1 per cent losses, but the percentage of losses being even much less in 180 cases of the last few years with improved methods and greater experience. The authors consider it by no means unlikely that by further physical and experimental researches we may learn to employ more penetrating rays effectually and without damage in more deeply seated eye affections. A bibliography and a subject index are added.

C. Zimmermann.

Die Regulationsfunktion des menschlichen Labyrinthes und die Zusammenhänge mit verwandten Funktionen. (The regulatory function of the human labyrinth, and connections with related functions). M. H. Fischer, professor of physiology and anatomy in agricultural department of German technical eye school at Prague. 170 pages, fifty illustrations. München, J. F. Bergmann, 1928. Price 14.60 marks.

By careful researches continued for many years, the author has gained an insight into this intricate subject from which he feels justified in formulating his own conclusions. While so far these problems have chiefly occupied the clinicians, Fischer considers a discourse on the regulation functions of the labyrinth from a physiological aspect of value by cultivating closer relations between physiology and otology, neurology, and ophthalmology. After a bibliography of 422 items and general remarks on the vestibular apparatus as a sensory organ, the sensation of motion, so-called "vestions", and their modification by turning and passive movements, other problems of sensory stimulation are very elaborately discussed under such heads as ocular, tactile, vertigo, sensations of position, the vestibular apparatus as reflex organ, dynamic reflexes, galvanization, and nerve centers of regulation of equilibrium.

C. Zimmermann.

Gewerbliche Augenschädigungen und ihre Verhütung (Industrial eye injuries and their prevention.) O. Thies. Forty-two pages, thirty-five illustrations. Berlin, Julius Springer, 1928. Price 4.80 marks.

The author, who practices in a large industrial region of Germany, briefly discusses the lesions, without injuries of the ocular tunics, from atmosphere, dust, chemicals, vapors, gases, fluids, and solids, infection, and also by affections resulting from those of the whole body, e.g., ankylostomiasis of miners and caisson disease. Then the injuries of the different parts of the eye, from explosion, acids or other cauterization, light rays, and miner's nystagmus are considered, with measures for prevention, and statistics.

C. Zimmermann.

ABSTRACT DEPARTMENT

Abstracts will be classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is only mentioned in one. Not all of the headings will necessarily be found in any one issue of the Journal.

CLASSIFICATION

1. General methods of diagnosis
2. Therapeutics and operations
3. Physiologic optics, refraction, and color vision
4. Ocular movements
5. Conjunctiva
6. Cornea and sclera
7. Uveal tract, sympathetic disease, and aqueous humor
8. Glaucoma and ocular tension
9. Crystalline lens
10. Retina and vitreous
11. Optic nerve and toxic amblyopias
12. Visual tracts and centers
13. Eyeball and orbit
14. Eyelids and lacrimal apparatus
15. Tumors
16. Injuries
17. Systemic diseases, including parasites
18. Hygiene, sociology, education and history

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4. OCULAR MOVEMENTS

Stewens, Herman. **Congenital disturbances of motility of the ocular muscles.** Zeit. f. Augenh., 1928, v. 65, May, p. 1.

Six cases are reported: (1) Ptosis with loss of levator function, peculiar only in that it was associated with congenital anomalies of musculature of other parts of the body. The loss of upward rotation is often not congenital but due to disuse because of the ptosis. (2) Unilateral paralysis of the levator and paresis of the rectus superior, rectus inferior, and inferior oblique. At operation normal muscles were demonstrable, suggesting that the seat of the lesion was in a hypoplastic oculomotor nucleus. (3) A similar lesion associated with flaccidity of the face. (4) A wry neck due to osseous malformation associated with total ophthalmoplegia. No other such case has been reported. In the enforced position of the head there was not diplopia, but in every other position to which the head could possibly be turned there was. In the other two cases, occurring in brother and sister, ocular wry neck was associated with strabismus and nystagmus. In none of the cases was it absolutely certain where the causative lesion was situated, yet these cases are important additions to the little that is known of congenital muscular anomalies, in that in one of them an operation cured the wry neck, and in others the operation gave an opportunity to inspect the muscles.

F. H. Haessler.

5. CONJUNCTIVA

Angelucci, A. **The biology of trachoma.** Arch. di. Ottal., 1927, v. 34, Feb., pp. 49-59, and March, pp. 97-126.

In the course of a general discussion of trachoma, the author mentions cases of trachoma produced by autoinoculation in prisoners after the war. Trachoma developed in about thirty per cent of those who practiced simple inoculation of infected secretion into the conjunctival sac, while where the conjunctiva was at the same time abraded it developed in seventy per cent. A slight conjunctival reaction appeared two to three days after inoculation, after two to four weeks the conjunctiva showed a diffuse thickening, and in two months the picture of acute trachoma with follicles was present. Corneal lesions developed, which in some cases led to blindness. About three hundred such self-provoked cases were seen in the Slavic prison hospitals.

In summarizing statistics from the Orient, and Italian statistics, the frequency of infection in the first two years of life is emphasized, while the lesser incidence in the higher school grades is evidence that many cases are cured spontaneously. In the diagnosis

of trachoma the author makes use of diascopy, the observation of the conjunctiva through a plane glass pressed upon it, which isolates the lesions. He believes this is of value in distinguishing trachoma from the follicular conjunctivitis of lymphatic patients, which has often confused immigration authorities.

The relation of constitution with the course of trachoma is emphasized, eighty per cent of the author's cases showing granular pharyngitis, twenty per cent hypertrophied tonsils, and thirty per cent rhinitis, the degree of these conditions usually corresponding to the severity of the trachoma. The blood picture of trachomatous patients and investigations of their sera are discussed. The results of efforts to control trachoma in the schools of Italy and Tripoli and especially under the author's direction in Naples are described. *S. R. Gifford.*

Birch-Hirschfeld. **Some of the newer views of trachoma.** Zeit. f. Augenh., 1928, v. 65, July, p. 209.

At Königsberg the author still has ample clinical material upon which to base an opinion of recently published views regarding trachoma. He disagrees with Elschnig's clinical classification, and feels strongly that granular conjunctival affections which heal readily without formation of scar tissue can not be called trachoma. He also disagree with Peters, who believes that one sees all transitions between simple conjunctivitis and trachoma, and that the determining factor in acquiring true trachoma is individual disposition. If one makes the conception of trachoma so loose and even doubts a specific etiology, then it would be better to drop the term entirely. Certainly both clinical experience and histological studies teach that two processes occur in the conjunctiva, one characterized by its benignity, the other by softening and later scar formation. Elschnig's classification and Peters' view ignore this sharp differentiation. It is practically important, even though many cases can not be recognized on first examination as belonging definitely to one group or to the other. *F. H. Haessler.*

Di Fede, N. **Tracholysin in the treatment of trachoma.** Arch. di Ottal., 1927, v. 34, Sept., pp. 424-427.

Tracholysin is a compound of sodium and calcium salts with sodium nucleinate and phenol with the addition of novocain, which was proposed by Angelucci. It is used for subconjunctival injections given every three to four days. Four early cases were cured in two months, two cases of fully developed trachoma in three months, one out of four cases of trachoma showing degenerative changes in four months, and two others were improved.

S. R. Gifford.

Fileti, Antonino. **Hyaloid degeneration of the conjunctiva.** Ann. di Ottal., 1928, v. 56, Jan., p. 66.

A man forty-seven years of age, subject to slight periodic attacks of inflammation of the right eye, presented himself because of a yellow spot appearing on the lower and inner side of the eyeball. There was barely perceptible hyperemia, with a moderate serous discharge later becoming mucoid. The spot was of a golden yellow color, having the appearance of a pinguecula. It consisted of three portions, each of the size of a large pinhead, about a millimeter from the limbus. It was perfectly flat, the edges being brownish and the surrounding conjunctiva unduly shiny. The tissue was found microscopically to be a hyaline degeneration. The etiology was obscure. *F. Park Lewis.*

Guglianetti, L. **Trachoma in Cagliari.** Arch di Ottal., 1927, v. 34, Aug., pp. 337-356.

Of 9,210 patients cared for in the eye clinic during 1922-1926, 5,278, or 57.3 per cent, had trachoma. Eighteen per cent of these cases occurred in the first five years of life, and forty-five per cent in the first fifteen years. As regards the type of children affected, 64 per cent showed signs of lymphatism, 23

per cent had adenoids, 9.5 per cent were scrofulous, and 3 per cent tuberculous. Of the ocular complications of trachoma, 10.7 per cent showed trichiasis or entropion, 10 per cent pannus, and 9.6 per cent corneal ulcers. These complications were much more frequent in the older patients. Of one hundred cases of incipient trachoma examined for bacteria, thirty-two showed Morax-Axenfeld and twenty-eight Koch-Weeks bacilli, and in many the acute conjunctivitis might be considered the predisposing cause of trachoma. The author believes most cases are acquired by contact in the family. *S. R. Gifford.*

Herrenschwand, F. **The spirochete and Bacillus fusiformis in acute conjunctivitis.** Zeit. f. Augenh., 1927, v. 62, Aug., p. 370.

The author claims that the fusiform bacillus is found almost always in the company of Spirocheta dentium, and occurs in tonsils and particularly around the gums. He publishes this case of conjunctivitis caused by these parasites. *David Alperin.*

Jilek, J., and Krisztics, E. **Trachoma and exudative diathesis.** Klin. M. f. Augenh., 1928, v. 80, April, p. 487.

The authors investigated one hundred cases for the signs described by Angelucci and Sgrosso as indicating "pretrachomatous constitution," and found them identical with those of the exudative diathesis, i. e. diminished local and general resistance against pathogenic germs. The question can only be finally solved after the morbid agent of trachoma becomes known. *C. Zimmermann.*

Leccisotti, G. **The struggle against trachoma.** Arch. di Ottal., 1927, v. 34, July, pp. 289-323.

This is a description of the special classes for trachomatous children in the schools of Taranto in 1926-1927. Certificates of ocular examination were required of all pupils, and four hundred and eight cases of trachoma were found. Pupils were treated by oculists twice a week and a record kept of each case. *S. R. Gifford.*

Matkovich, L. **De trachomæ natura.** Arch. di. Ottal., 1927, v. 34, pp. 60-75.

The author emphasizes the body's natural defences against the trachoma virus. One of the most important of these is the lacrimal secretion, whose normal alkalinity is pH 7.5 to 7.7, distinctly above that of the blood serum. When it falls below this, from internal or external causes, the integrity of the epithelium suffers, allowing the entrance of organisms. Every effort should be made to increase the efficiency of the natural defences, attempts at autohemotherapy and the local use of vaccines being steps in the right direction. Mechanicosurgical measures the author believes should be condemned as interfering with these defences. He has seen good effects upon corneal complications by milk injections and even better from autohemotherapy. Twenty per cent saccharose with five per cent glycerine applied in an eye bath is of value by its osmotic effect. In place of scarifications the author uses subconjunctival injections of various antitrachomatous preparations, believing this preserves the tarsus from involvement. *S. R. Gifford.*

Nitsch, Maximilian. **The genesis epitarsus.** Zeit. f. Augenh., 1927, v. 62, May, p. 63.

After inflammation and excessive chemosis of the fornix, a fold of conjunctiva came down and, its free end agglutinating with the tarsus, formed a sort of bridge symblepharon. After the inflammatory symptoms had subsided and the chemosis had receded the picture gave the impression of an epitarsus resembling also a pseudopterygium. A probe could be passed between the fold and tarsus. Photographs are appended. *David Alperin.*

Steiner, L. **The treatment of scrofulous diseases of the eyes** (phlyctenular or eczematous conjunctivitis). Schweiz. med. Woch., 1927, v. 57, Dec., p. 1201.

The improvement in the eyes depends on the general condition of the patient. Light, air, and sun are the great prophylactic factors.

Beulah Cushman.

Verwey, A. **Subconjunctival tissue and pterygium.** Jour. Med. Assoc. of South Africa, 1928, July 28, p. 382.

The supposed origin of pterygium from corneal ulcer and from pinguecula are referred to; and also the fact that the subconjunctival tissue, which carries the blood vessels, should end where Bowman's membrane commences. Verwey remarks that the first beginning of a pterygium consists in an increase of this subconjunctival tissus near the limbus, and the new strands grow partly over, partly in, the membrane of Bowman. It is suggested that this subconjunctival new growth particularly calls for removal.

In the operation suggested, "the head of the pterygium is severed from the cornea more by tearing than by cutting. A broad flap, containing the pterygium and the subconjunctival tissue, is loosened far back into the caruncle and up and down along the cornea. The sclera and the capsule of Tenon should be bare: the freed surface of the cornea is scraped. The thick flap is now divided by a horizontal incision, and each triangular slip lifted by an assistant and scrupulously freed from the conjunctival tissue. This stage is the most important part." *E. J.*

6. CORNEA AND SCLERA

Behr, Carl. **On the fundamentals of neuroparalytic keratitis; also a contribution on neuroparalytic keratitis after injection of alcohol into the gasserian ganglion.** Zeit. f. Augenh., 1927, v. 62, May, p. 1.

In a comprehensive article, the author claims that the sensory fibers of the trigeminus possess trophic functions, that keratitis neuroparalytica following alcohol injection in the ganglion is different from the ordinary clinical neuroparalytic keratitis. He classifies two large groups: (1) round or oval superficial loss of substance, generally below the center of the cornea; (2) epithelial lesions in spots over the center or below the center of the cornea not unlike superficial punctate keratitis. These epithelial defects are unamenable to treatment and appear in spite of prophylactic protecting bandages. The corneal lessions appear soon after the injection, sometimes the next day, in contradistinction to keratitis neuroparalytica, as caused by gasserectomy. The regenerated epithelium has a thick, spongy, skin-like appearance, has no intimate contact with the corneal stroma, and can be easily lifted up from the underlying structures. The quick regeneration of the epithelium, with the return, though weakened, of trigeminus function, is of particular importance.

Because of the relative frequency, long duration, resistance to therapy of neuroparalytic keratitis, and the fact that the ganglion injection does not prevent recurrence of the neuralgia, this method should be completely abandoned. The author believes that the corneal disorder may be due not to the anesthesia, but to some trophic disturbance, to a disease of the hypothetical trophic fibers, a "trophoneurosis". He adduces a few instances in favor of this theory as to a neurotrophic origin of the keratitis.

David Alperin.

Birnbacher, T. **Changes in the corneal epithelium in a case of myotonic dystrophy.** Zeit. f. Augenh., 1927, v. 62, May, p. 44.

Besides the usual ocular findings in myotonic dystrophy such as cataract, optic nerve disease, and once a corneal change, the author describes a peculiar unevenness of the corneal epithelium, with hypesthesia and vesicular elevations; the eye being entirely free from any irritation. These vesicles would flatten on closing the lids or on massaging the cornea. These conditions are similar to those found in atrophic myotony and are probably due to some deficiency disease or congenital diathesis. *David Alperin.*

Filatow, W. **On the technique of partial keratoplasty.** Zeit. f. Augenh., 1928, v. 65, June, p. 147.

To prevent the prolapse of vitreous which so often occurs when he performs Hippel's keratoplasty, the author has modified the technique. After preparing a conjunctival flap above, he makes two parallel vertical incisions through the cornea by transfixing the anterior chamber with a Graefe knife. through these slits a strip of celluloid is passed, which can then be pulled forward, and trephining of the leucoma can be performed without danger of expression of vitreous. After completion of the Hippel transplant the celluloid is removed and the conjunctival flap sewed in place over the cornea.

F. H. Haessler.

John, I. **Tubercles on the posterior corneal surface in Groenouw's familial corneal dystrophy.** Zeit. f. Augenh., 1928, v. 65, July, p. 240.

In a sister and brother afflicted with corneal changes typical of Groenouw's familial dystrophy, the author observed a hitherto unreported postcorneal lesion. This consisted of small yellowish granular opacities some of which distinctly protruded, the largest in the upper and lower marginal portions of the cornea. Laterally and near the center they became smaller and less numerous. The superficial opacities precluded a more minute study of the postcorneal lesions but it was demonstrable that the endothelium was amorphous. This lesion has not been observed before either clinically or histologically, but probably the tubercles have been missed because of their insignificant size, and the present case is peculiar only in that the opacities were unusually large. This is also true of Fuchs's epithelial dystrophy, in which severe postcorneal changes have recently been repeatedly observed with the slit-lamp.

F. H. Haessler.

Kuborn, Peter. **Treatment of parenchymatous keratitis due to hereditary lues.** Zeit. f. Augenh., 1927, v. 62, June, p. 168.

The article contains nothing new, except that the malarial treatment for this condition is spoken of favorably and further study is recommended.

David Alperin.

Kukan, F. **Treatment of parenchymatous keratitis with bismuth.** Klin. M. f. Augenh., 1928, v. 80, April, p. 478.

In the course of twenty-eight months, twenty-six cases of parenchymatous keratitis were treated with bismosalvan (an oily suspension of iodin, quinin, and bismuth, containing one part of the active substance in ten of the suspension), or sometimes with neobismosalvan (iodin, quinin, lecithin, and bismuth). At first one c.c. of the mixture was given every five days, for twelve injections, then two c.c. every second day for twelve injections; the condition of the urine and of the mouth being carefully controlled during the treatment. In every case an improvement was noticeable within two weeks. The visual results were excellent. Involvement of the second eye could not be prevented, but the course was mild in this eye. The remedy was well tolerated, and the influence on the general condition was favorable (gain in weight). In many cases a bismuth line was observed on the gums, but ulceration never occurred. In two cases there was albuminuria for six days, but the treatment could be resumed after a few days without further disturbance. Bismuth has a much greater therapeutic value than mercury. Locally dionin and iodol salve acted very favorably. There was no relapse within twenty-six months.

C. Zimmermann.

Kumer, L., and Sallmann, L. **Radium treatment of fistulous corneal ulcers.** Zeit. f. Augenh., 1927, v. 62, May, p. 41.

The authors used radiation successfully in closing fistulas which had resisted all other methods. The number treated is small and does not allow a final opinion on the efficacy of radiation in such conditions.

David Alperin.

Lehmann, H. **Spun glass formation on the posterior surface of the cornea after parenchymatous keratitis.** Zeit. f. Augenh., 1927, v. 62, July, p. 230.

Linear infiltrations and folding of the cornea after parenchymatous keratitis usually occur in the first eye only, and the author explains them as due to tears in Descemet's membrane during deep corneal infiltration, to folding after recession of corneal swelling, and to deposits of fibrin on the posterior corneal surface in consequence of exudation from the iris.

David Alperin.

Schnyder, W. F. **New findings on the posterior surface of the cornea in family degeneration of the cornea.** Klin. M. f. Augenh., 1928, v. 80, April, p. 466. (4 ill.)

In a family affected with degeneration of the cornea, a man aged eighty-seven years and his wife aged sixty-eight years showed coral-shaped greyish-white deposits on the posterior surface of the cornea, covered and surrounded by pigment dust. Both patients had suffered from keratitis and ulcers of long duration, with which the deposits were perhaps in causal connection by favoring accumulation of fibrin and cellular elements.

C. Zimmermann.

Sniegirev, K. V. **On Knapp's method of tattooing the cornea.** Russkii Opht. Jour., 1928, June, pp. 728-730.

The three per cent solution of gold chloride, proposed by Knapp of Basel for corneal tattooing, has proved entirely too strong in the author's experience. Far better results were obtained by using a weak acid one-third per cent solution of gold chloride, applied for five minutes to the scarified surface of the cornea. This was followed by the instillation of a one-third per cent solution of tannin. Of forty-six cases reported by the author, twelve, in which the strong solution of gold chloride had beeen used, required repeated staining, while in the remaining thirty-four cases both the immediate and the remote results were good. *M. Beigelman.*

Spanlang, Herbert. **Clinical and pathological contribution on rare corneal diseases (dystrophia adiposa corneæ, dyskeratosis corneæ congenita).** Zeit. f. Augenh., 1927, v. 62, May, p. 21.

The author describes a few conditions of corneal keratinization similar to those conditions known as Groenouw's and Haab-Dimmer's disease of corneal degeneration. These degenerative changes are due to acid lime salt deposits more than to lipoid substances. They are genetically due perhaps to metastatic or possibly dystrophic calcium deposits or both, with or without lipoid degeneration, and are not developmental, as Hofmeister and Axenfeld seemed to agree. They are congenital, hereditary, and symmetrical corneal changes, and are genetically and anatomically of the same character as the skin affections. These corneal affections are characterized by (1) peculiar formation of the epithelium, (2) keratinization, (3) absence of Bowman's membrane and formation of a loose cellular membrane of connective tissue in its place. The article has a slit-lamp drawing of the condition described and a comprehensive bibliography. *David Alperin.*

K. Vogelsang. **Experimental study of corneal sensitivity by means of the reaction time method.** Zeit. f. Augenh., 1928, v. 65, May, p. 63.

A hard rubber ball weighing 1.82 grams is dropped upon the unanesthetized cornea from a height of 0.5 cm. The position of the ball, a time marker in fiftieths of a second, and a signal operated by the subject's hand are recorded on a film. A number of measurements on five subjects with normal eyes showed an average reaction time of 0.265 second, varying from 0.232 to 0.293. Ten measurements on a patient with severe iridocyclitis disclosed an average reaction time of 0.361, varying between 0.29 and 0.46.

F. H. Haessler.

Vogt, A. **Herpes of the cornea and accidents.** Schweiz. med. Woch., 1927, v. 57, Sept., p. 481.

The author believes that injury to the cornea is the beginning of the development of herpetic infections, the organisms being found in the conjunctival sac. This was found to be true in animal experimentations.

Beulah Cushman.

7. UVEAL TRACT, SYMPATHETIC DISEASE, AND AQUEOUS HUMOR

Beselin, Otto. **Iritis caused by pus pockets in the tonsils and disease of the teeth.** Klin. M. f. Augenh., 1928, v. 80, April, p. 501.

Five cases of iritis are reported in which slitting of the pus pockets in the tonsils readily cured the affection.

C. Zimmermann.

Calogero, G. **Auditory disturbances in sympathetic ophthalmia.** Arch. di Ottal., 1926, v. 33, Nov., pp. 499-519.

Eight cases of deafness occurring in sympathetic ophthalmia have been reported, two being in the Italian literature. These cases are briefly abstracted by the author, who reports a ninth case. Following an injury to the left eye, sympathetic ophthalmia developed, necessitating enucleation. Twenty days after the operation tinnitus came on with marked diminution of hearing. When seen by the author three years later hearing was: right, watch at ten cm.; left, watch at contact. The middle ear of one side showed only slight pathology, not sufficient to account for the disturbance of hearing. The author believes the symptoms of vertigo, tinnitus, and deafness are due to involvement of the sympathetic fibers in the petrosal nerves supplying the internal ear, by extension from the uveal tract through the carotid plexus. (Bibliography.)

S. R. Gifford.

De Rosa, G. **Influence of hypopsysin on the pupil.** Arch. di Ottal., 1926, v. 33, Nov., pp. 520-529.

The author used the posterior lobe extract of Meister Lucius for experiments in rabbits. Instillation produced miosis, while subconjunctival injection produced primary miosis, followed by mydriasis lasting twelve hours. Intravenous injections produced mydriasis alone, evidently by stimulation of the sympathetic. (Bibliography.)

S. R. Gifford.

Dinger, G. **Vessels on the anterior lens capsule without visible membrane.** Zeit. f. Augenh., 1928, v. 65, June, p. 129.

The formation of vessels on the lens capsule in the course of an exudative inflammation is common. They arise from the surface of the iris, and after healing of the process become so thin as to be visible only with the microscope. In the present case a large vessel was seen to develop in a glaucomatous eye, ten months after an Elliot operation with large iridectomy had beeen performed. The vessel arose behind the iris, was turgid, light red with bright reflex; and microscopic examination failed to reveal corpuscular streaming in it, demonstrating that it was thick-walled. No tissue could be found surrounding the vessel. New branches formed during the period of observation. The eye remained soft, the lens became rapidly cataractous, and the vision rapidly fell to zero. It is presumed that the vessel arose from the ciliary body, which had become the seat of inflammation such as is not uncommon after trephining. It was impossible to see a very thin membrane which might have accompanied the vessel, and of which the disproportionately large vessel had become independent. Such nearly naked new-formed vessels are occasionaly seen in the vitreous, though in this structure also the new-formed vessels are usually accompanied by a much larger mass of connective tissue.

F. H. Haessler.

Ginsburg, J. **Sympathetic ophthalmia and smypathetic irritation.** Zeit. f. Augenh., 1928, v. 65, May, p. 24.

Detailed report is given of three cases of sympathetic ophthalmia. In

the first the sympathetic ophthalmia occurred eleven years after injury to the other eye, contrary to the belief expressed in Schirmer's and Peter's monographs. The disease began moderately, without previous clinical manifestations or irritation in either eye. It cleared rapidly after enucleation of the injured eye. The fundus became visible after vitreous opacities cleared up, and aside from the typical peripheral yellowish choroidal lesions, surrounded by minimal pigmentation, there were about twenty glistening white dots about the nasal side of the macula, not arranged in a star figure. in the temporal half of this area was a large retinal hemorrhage. In the second case there was severe sympathetic irritation, with cutting pains and great photophobia, for a period of two months in the uninjured eye, relieved only by enucleation of the injured (right) eye. In the absence of evidence of any pathological involvement in the region of the left fifth nerve the author assumes that the severe symptoms related to the left, uninjured eye had their origin in the right, injured eye, which had been involved in a severe plastic uveitis. Histological studies of the enucleated eyes are described. In the third case there was long standing irritation of the second eye after its mate had been tattooed with gold chloride. *F. H. Haessler.*

Heygster, H. **Disturbances of pupillary reaction and life expectancy.** Zeit. f. Augenh., 1928, v. 65, June, p. 166.

The author reviewed all cases with abnormal pupillary reactions in the out-patient department of the eye clinic of the University of Kiel between 1900 and 1919. He found 178 patients with undoubted reflex iridoplegia, or ophthalmoplegia interna. Of these 66 had died but 86 could be reexamined. Thirty-four per cent of patients with reflex iridoplegia had not had their lives decreased, thirty per cent but slightly, and thirty-seven per cent greatly. With total iridoplegia forty-eight per cent had no decrease in length of life, eighteen per cent had slight decrease, and thirty-four per cent had a great reduction. In these two groups the prognosis is most favorable if the lesion is acquired between the twenty-fifth and the thirty-fifth year of life. The greatest number of early deaths occurred when the pupillary disturbance had been discovered near the age of forty years.

F. H. Haessler.

Kranz, H. W. **Crystals in the anterior chamber and lens.** Zeit. f. Augenh., 1928, v. 65, July, p. 219. (See Section 9, Crystalline Lens.)

Kreiker, A. **Contribution to essential atrophy of the iris.** Klin. M. f. Augenh., 1928, v. 80, April, p. 492. (1 ill.)

In a woman aged forty-one years, with atypical congenital diplocoria and rarefaction of the stroma of the left iris, a third opening developed in the iris after two years. The disappearance of tissue commenced at the surface and at the periphery and progressed toward the sphincter. At the end of the year glaucoma set in, and later it became absolute. The author sees in the disappearance of iris tissue a process analogous to obliteration of the pupillary membrane due to a disturbance in the action of this embryonic mechanism.

C. Zimmermann.

Togby, A. F. **Pseudosympathetic inflammation.** Zeit. f. Augenh., 1927, v. 62, July, p. 272.

The author warns against considering every iridocyclitis in the second eye, in a patient whose first eye was injured, as a sympathetic ophthalmia. He claims with Echeverria that prolonged irritation will produce in an otherwise normal eye lymphatic nodular infiltration. A subchoroidal hemorrhage will induce a reactive inflammation. Adding to this mechanical irritation the toxic irritation produced upon the surrounding tissues by decomposition of blood pigment and peptonizing of blood proteins, we find an explanation of the anatomical picture of pseudo sympathetic inflam-

mation due to subchoroidal hemorrhage, *David Alperin.*

8. GLAUCOMA AND OCULAR TENSION

Gapeev, P. I. **Adrenalin and glaucosan therapy of glaucoma.** Russkii Opht. Jour., 1928, June, pp. 704-712.

Since adrenalin injections are not always safe in advanced age, the author prefers in the treatment of glaucoma the use of glaucosan, which has no effect upon the general blood pressure. He reports twenty cases of chronic inflammatory and simple glaucoma, including two cases of iritis with increased tension, in which glaucosan in subconjunctival injections and in drops proved of value by reducing temporarily the intraocular pressure. Amin-glaucosan, proposed by Hamburger in 1926, was tried out in one case of acute glaucoma and in one case of absolute glaucoma. In both, surprisingly good results were demonstrated. The report is illustrated with four graphic charts of the intraocular pressure. *M. Beigelman.*

Magitot, A. **Multiple sources of aqueous humor.** Ann. d'Ocul., 1928, v. 165, July, pp. 481-507.

The author introduces the subject by a review of his contention of 1916 that the aqueous is a dialysate of the blood, to which conclusion he still adheres. The reasons for this are outlined. Then follows a discussion of the changed point of view with regard to the production of the cerebrospinal fluid, it no longer being thought to be entirely the product of the choroidal plexus. The analogy between the cerebrospinal mechanism and that of the aqueous and ciliary body is drawn, with a review of the secretory theories. Next there is a discussion of the relation between cerebrospinal fluid pressure and intraocular pressure. Finally the arguments for and against an intraocular current are given, with the conclusion of the author that his former contention that there was no current other than such as might occur from dialysation was current. He believes there are many sources for the aqueous humor, and among them he includes the retinal cells. *L. T. P.*

Nonay, Tibor. **Our experiences with glaucosan.** Klin. M. f. Augenh., 1928, v. 80, April, p. 503. (4 ill.)

Eight cases of glaucoma simplex and three of secondary glaucoma were treated with glaucosan, strictly according to Hamburger's directions. In glaucoma simplex the tension declined; also in cases in which miotics had failed. In two it ran from thirty-five to forty-five mm. Hg. In secondary glaucoma the effect depended on the cause of the hypertension. If this was caused by synechiæ the tension became normal after their separation by glaucosan. In absolute glaucoma no decrease of tension was obtained. In cases in which the tension was lowered, the effect lasted from one-half to ten days. In two cases the other, untreated, eye also became soft, apparently due to the hormonic action of glaucosan. Aside from this, by excitation of the sympathetic nerve glaucosan produces contraction of the uveal vessels, whereby blood is pressed out of the eye and thus its contents are diminished. Its action can not be uniformly explained.

In iritis the mydriatic action of glaucosan is greater than that of atropin but it can be neutralized by a drop of eserin. In recent cases of iritis, synechiæ could be torn loose more readily by glaucosan than by atropin.

According to Nonay's experiences, glaucosan may be tried in glaucoma simplex and iritis, but under precautions. Glaucosan does not prevent the necessity of operation. As to postponement of operation it does not do more than the usual miotics. It may be recommended shortly before operation in order to create, by rapid diminution of tension, better conditions for operation. Contrary to Hamburger, Nonay advises against glaucosan if only one eye is left, on account of possible increase of tension which can not be relieved by eserin.

C. Zimmermann.

Römer, Paul. **The question of replacement of intraocular fluid.** Zeit. f. Augenh., 1927, v. 62, July, p. 218.

He used the weighing method, and found the theory of Leber, that the fluid is completely replaced after emptying the anterior chamber, to be incorrect, at least in the rabbit. The eyes were weighed from one day to four months after opening the eye, and the results are tabulated.

David Alperin.

Samoilov, A. I., and Korobova, V. M. **Ciliary blood circulation of the eye, and its correlation with general blood pressure and with intraocular tension.** Russkii Opht. Jour., 1928, June, pp. 693-703.

Simultaneous measurements of general blood pressure, of the pressure in the anterior ciliary arteries and veins (Seidel's method), and of intraocular tension, performed in normal individuals, in those suffering from general hypertony, and in patients with chronic glaucoma, demonstrated remarkable stability of the ciliary blood circulation. The height of the pressure in the anterior ciliary blood vessels remained the same, independent of any change in the general blood pressure or in intraocular tension. This is due, in the author's opinion, to the presence of a self-regulating mechanism in the capillary system of the eye. No relation between intraocular tension and general blood pressure could be discovered. *M. Beigelman.*

Schmidt, Karl. **The question of tension reduction in herpetic keratitis.** Zeit. f. Augenh., 1927, v. 62, July, p. 227.

The author inoculated rabbits' eyes with herpetic virus, and found that the tension of the infected eye was lowered, the volume remaining the same although hyperemia of the ciliary body was found. *David Alperin.*

Schmidt, Karl. **The action of some medicines upon the volume and pressure of the rabbit's eye.** Zeit. f. Augenh., 1927, v. 62, July, p. 221.

Since the advent of the tonometer, we know that eserine also lowers intraocular pressure in the normal eye. The weight of the eye under eserine remains the same, disproving the theory that hypotension is due to narrowing of intraocular vessels. The eserine was introduced into the vitreous through a canula; entrance being under a muscle to prevent the drug leaking out. In the eye under pilocarpine the author finds an increase in weight during hypotony, and he explains this as a result of hyperemia. The same increase was noticed in adrenalin hypotony in the stage of hyperemia. Alcohol and chloroform on the contrary showed loss of weight with the hypotony. The author concludes that reduction of introcular tension may be produced physically in two ways; by an increase and also by a decrease of eye weight. Of importance seems to be the fact that the drugs used in the conservative treatment of glaucoma reduce tension and increase eye weight. Under what physical circumstances such phenomena may coincide is yet to be found out.

David Alperin.

9. CRYSTALLINE LENS

Burky, Earl L., and Woods, Alan C. **Lens protein: the isolation of a third (gamma) crystallin.** Arch. of Ophth., v. 57, Sept., pp. 464-466.

In this brief paper the authors report the isolation from beta crystallin of a third, so-called gamma cristallin. The alpha and beta cristallin are pseudoglobulins, while the gamma crystallin is an albumin. In vivo its antigenic activity is slight. It is, however, capable of producing antibodies in connection with other crystallins. In vitro it acts as a definite antigen.

M. H. Post.

Fecht, W. **Familiar lens luxation.** Zeit. f. Augenh., 1927, v. 162, June, p. 162.

Ectopia lentis was traced in three brothers and one sister, and was probably due to heredity of fluid vitreous, high myopia, and faulty development of the zonule. The lens in each case was more or less turbid. The author

believes that the heredity of the condition is recessive, sexual, and unattached, based upon a developmental defect. *David Alperin.*

Kranz, **Crystals in the anterior chamber and lens.** Zeit. f. Augenh., 1928, v. 65, July, p. 219.

While most of the literature on this subject consists of individual case reports, this author attempts a unified description of the clinical occurrence of crystals in the anterior segment as well as of the character and composition of the crystals.

In 110 human lenses calcium deposits were almost constant in the nuclear layer after the fiftieth year. This was true of clear as well as of cataractous lenses. The calcium is probably present as carbonate and not as phosphate. Anisotropic fats, notably cholesterol and cholesterol esters, are another important group of crystals. These were present in the cases described by Szily as xanthomatosis bulbi. Such substances are easily demonstrable polariscopically in many cataractous lenses, although no one has succeeded in tinctorial demonstration of their presence in histological preparations.

Though many have succeeded in getting fatty deposits in cornea, sclera, and uvea by experimentally producing hypercholesterinemia, no one has observed such changes in the lens. Recently Yozo-Sugita has done so by combining phosphorus poisoning with cholesterol feeding. Probably the lipoid deposits in the lenses in senile cataracts are the result of an infiltrative process, certainly not of fatty decomposition.

The author confirms Pellaton's statement that approximately twenty-eight per cent of normal lenses have demonstrable glistening colored punctate opacities, but it is not true that these are always caused by a crystalline deposit. In the future it will be interesting to study these polariscopically with Koeppe's apparatus. *F. H. Haessler.*

Bothman, L., and Kronfeld, P. **The question of lens respiration.** Zeit. f. Augenh., 1928, v. 65, May, p. 41.

Using the method outlined in Warburg's metabolism of tumors, the authors find that a slight oxidation is definitely demonstrable, and that there is a noticeable catabolism. From these sources the lens fulfils its energy requirements of life and growth. In keeping with the meager oxygen supply from the aqueous, the lens is adapted to a slow catabolism even in aerobic conditions. A particular difficulty in these measurements is the presence of an oxidoreduction system in the lens substance, found by Goldschmidt. This probably has the function of transferring and binding the oxygen present in the aqueous in low concentration. *F. H. Haessler.*

Maddox, E. **Wound fixation for intracapsular extraction of cataract.** Brit. Jour. Ophth., 1928, v. 12, Aug., p. 411.

This is a description of a pair of forceps which the author has found to be of great assistance. After completion of a limbal incision, the extreme cut edge of the conjunctiva in the center of the upper wound-lip is grasped with a fine pair of capsule forceps so curved as to allow easy exit of the lens (illustration). The gentle grip thus secured not only affords excellent control of the eyeball, but counteracts that embarrassing tendency of the cornea to wander up under the lid, which requires only a very gentle pull to prevent. The instrument, thus holding on to the upper lid of the wound, cannot slip into the eye or invade the vitreous, yet it enables the upper wound-lip to be depressed and tucked under the emerging lens, and raised again as the equator of the lens passes out so as to bar the vitreous from following.

If it is desirable to make a long conjunctival flap the author uses another pair of forceps with a small thin plate of metal attached to its lower foot, adjacent to the teeth, and standing out at right angles to the handle of the forceps so as to lie in apposition with the bared sclera as far as the upper edge of the wound. By tipping the handle forward, after the conjunctiva has been grasped two or three mm.

away from the wound, the plate can be inclined under the lens, the upper wound-lip being thus depressed as by an inclined plane. (Two illustrations.)

D. F. Harbridge.

Woods, Alan C. **Protein therapy—specific and nonspecific—in opthalmology.** Arch. of Ophth., v. 57, Sept., pp. 488-501.

This paper presents an excellent review of the subject of protein therapy in ophthalmology. The author makes five subdivisions of the subject. In the first of these, that concerning tuberculin therapy, he insists that great care be exercised to avoid focal damage and that on this account the initial dose should be small. It should not be instituted until all other foci of infection have been investigated, and the patient should be watched for a long period of time to detect any return of hypersensitivity.

Under the subdivision vaccine therapy, he calls attention to the work of Besredka on the antivirus of staphylococci and streptococci. There are two substances present, a toxic thermolabile virus and an atoxic thermostabile one, which is easily detached from the body of the organism and antagonizes the former substance. This latter he calls the antivirus. This antivirus, when applied to the receptive cells, renders them immune to the staphylococcus; that is, the instillation of the antivirus into the conjunctival sac from twenty-four to forty-eight hours before the introduction of the staphlycocci into the conjunctiva, cornea, and anterior chamber renders them immune to what would otherwise have been a fatal inoculation. Besredka believes further that a negative chemotaxis is prevented by the use of this antivirus.

Uveal pigment is next considered. The author points out that its use has been of great value in cases of sympathetic disease. He then discusses at considerable length the value of lens protein therapy, considering the arguments for and against its value in endophthalmitis phacoanaphylactica. He feels that there is a definite relationship between lens protein hypersensitivity and the inflammatory reactions developing after certain operative procedures, but as to therapeutic value for the prevention and absorption of cataracts he hazards no opinion. Alpha and beta crystallins are next considered. Both of them are organ-specific, but neither one species-specific.

Non-specific protein therapy, has been applied chiefly through the use of milk injections, antidiphtheric serum, and bacterial vaccine in the form of typhoid vaccine. Milk is the least violent and the doses least easily controlled. All of them result in a local reaction, followed by resolution of the inflammatory process. He feels that this type of therapy should always be considered as a special type, never routine, and that it is not indicated except in patients in good general condition, who are able to stand the first focal reaction without damage. It should be instituted so early in the progress of the disease that the normal resistance of the cells has not previously been completely destroyed.

M. H. Post.

10. RETINA AND VITREOUS

Barkan, Otto. **Cloquet's canal visible in the living, with observations on hemorrhage into Cloquet's canal.** Arch. of Ophth., v. 57, Sept., pp. 502-508.

The author reviews the literature concerning Cloquet's canal and presents the existing arguments for and against its presence in the adult. He reports a case of choroiditis, with turbidity of the vitreous, in which there was a perfectly translucent, cylindrical canal, passing from the disc to the posterior surface of the lens, and the average diameter of which was 1.5 d.d., widening out somewhat at either end. Through this canal the disc appeared bright and sharply defined, though only the lower third or half could be observed, due to sagging of the clear area. No membrane separating these two portions of the vitreous could be made out. The author feels very certain that this is a definite Cloquet's

canal. He also calls attention to the numerous cases on record of hemorrhage in the central portion of the vitreous, apparently lying in the canal, separated from the major portion. He cites two cases of such hemorrhage. These hemorrhages are known to clear up much more quickly than ordinary vitreous hemorrhages, supporting the idea that a lymph stream exists in this central portion, or Cloquet's canal, passing from before backward.

M. H. Post

Hamburger, Carl. **The treatment of occlusion of the central artery or one of its branches.** Zeit. f. Augenh., 1927, v. 62, July, p. 257.

The author believes that the preparation of histamin known under the proprietary name of aminglaucosan, in 1:1,000 solution should be effective in embolism and also in inflammatory thrombosis of the central artery or its branches. The theory explaining its action is based upon hyperemia of some collateral circulation of the retina or choroid. The drug is a strong miotic. It is supposed to be harmless, but the number of cases experimented on was too small to form a final conclusion.

David Alperin.

Kollert, V. **Nephritic retinitis.** Klin. Woch., 1927, v. 6, Oct., p. 1995.

The author studied 350 cases of kidney disease, which had been examined ophthalmoscopically, and these cases were studied carefully as to the time of the development of the changes in the fundi in relation to the general condition. While 170 showed changes in the fundi, ninety were free of any retinal changes.

Of cases with hypertension without retinitis sixty to seventy per cent had normal blood pressure for a long time. With increase in tension, retinitis became more frequent.

Some of the author's conclusions are:

(1) Nephritic retinitis can be found with normal blood pressure, but the prognosis should be guarded according to the cardiac condition.

(2) Retinitis usually appears with an increase in hypertension. Healing of the eye processes can take place with reduction of the hypertension, as opposed to the contention of Heine that the healed cases of nephritic retinitis were predominantly luetic.

(3) Hypertension occurs frequently in patients with normal or narrow retinal vessels, in whom the vessel changes are due to a congenital vessel anomaly or to anemia. Vessel changes may be present elsewhere in the body and not in the retina, or in the retina and not elsewhere.

(4) Anemia is often associated with general hypertension at the time of development of the retinitis.

(5) The reduction of erythrocytes in nephritis with the presence of an infectious process in the body frequently points to the focus for the kidney disease.

(6) Cholesterin is found early in the retinal changes.

(7) High blood pressure is the basis for the development of nephritic retinitis. Its pathologic physiology seems to be associated with narrowing of the retinal vessels, and coincident anemia usually follows. Fibrin is deposited as a result of venous stasis.

(8) Secondary choroidal changes and the star figure are due no doubt to malignant vascular sclerosis.

(9) For the general care the author advises rest, vegetable diet, hydrotherapy, and ultraviolet radiation. Blood transfusions are contraindicated in patients with nephritic retinitis.

Köppl, Arthur. **Pearl-string pigment streaks in the eyeground.** Zeit. f. Augenh., 1927, v. 62, June, p. 131.

The author cites six cases with a peculiar pigmentation of the retina. He differentiates these lesions from angioid streaks in that they are bead-like, lie under the retinal vessels, and accompany the choroidal vessels. They are found as a rule in patients with high blood pressure. Siegfried first described the condition. Histologically he found pigment deposits correspond-

ing to proliferation of retinal pigment epithelium. The lamina vitrea was beneath the pigment proliferation, so that this was not on the choroidal vessels. However, it followed them, and it is probably due to choroidal sclerosis.

David Alperin.

Koyanagi, Y. **Pathogenesis of nephritic retinitis.** Klin. M. f. Augenh., 1928, v. 80, April, p. 436. (12 ill.)

For the histological examination of six cases of nephritic retinitis, which are reported in detail, flat or oblique sections of the choroid surrounding the disc were made for demonstration of vascular changes in longitudinal section. In such specimens marked sclerotic alterations were regularly found not only in the coarser vessels but also in the choriocapillaris, which in the common transverse sections were usually overlooked. In all cases the histological findings were so identical that the author feels justified in reaching the following conclusions: With great probability grave alterations of the choroidal vessels with subsequent considerable disturbance of circulation in the corresponding area play the most important part in the development of nephritic retinal changes. The affection should be termed "nephritic chorioretinitis." The fat granules in the intermediary granular layer and in the subretinal space originate, not from glia cells, but from pigment epithelium. It seems very probable that under certain conditions, in consequence of functional disorders, fat granules, instead of pigment, are formed in the pigment epithelium. The pigment layer suffers from the considerable and extensive affections of the choroidal vessels, especially of the choriocapillaris, and shows signs of degeneration. The changes of the choroidal vessels are interpreted as primary degeneration perhaps caused by the toxic action of regressive metabolic substances in the blood current, which in the course of nephritis remain on the vessel walls. *C. Zimmermann.*

Newcomb, C., and Wright, R. E. **Some analytical observations on the vitreous humor from normal and glaucomatous eyes.** Arch. of Ophth., v. 57, Sept., pp. 480-483.

This is the report of a study on the constitution of the vitreous in glaucomatous and normal eyes. The total solids, ash, and chlorides, were chosen as being the most easily measured and giving a general indication of the constitution of the vitreous. From their experiments, the authors have determined that there is considerable variation in different eyes, and that the solids, presumably mostly proteins, may increase greatly without a corresponding increase in inorganic constituents. As the vitreous of only two normal eyes was available, they are unable to state with any degree of accuracy the difference between the normal and the abnormal vitreous.

M. H. Post.

Nitsch, Maximilian. **Eyeground findings in tuberous cerebral sclerosis.** Zeit. f. Augenh., 1927, v. 62, May, p. 73.

The author describes the retinal picture of a peculiar tumor-like formation around the papilla and throughout the retina. He associates this condition with mental diseases and with some systemic diathesis. Heredity also plays a definite part. Syphilis, dipsomania, and insanity, as well as multiple cerebral hemorrhages during birth, are given as causes of this disease. Many inflammatory foci are found in different parts of the body. A skin condition referred to in the German original as Pringle's nevus is said to be associated with tuberous cerebral sclerosis. Histo-pathologically one finds in the brain of such patients a definite proliferation of the glia and degeneration of the ganglion cells. According to van der Hoeve these tumor-like, cystic findings in the eye are pathognomonic of the disease, and a diagnosis of tuberous cerebral sclerosis may be made from such findings. *David Alperin.*

Sachs, Benjamin. **Eye conditions in leukemia: report of four cases.** Arch. of Ophth., v. 57, Sept., pp. 474-479.

In this paper the author reviews briefly the literature concerning ocular complications in leukemia. He found that the most commonly reported conditions were retinal hemorrhages, vitreous hemorrhages, retinitis, retinitis proliferans, distended veins, optic atrophy, optic neuritis, thrombosis of the central vein, and occasionally a yellowish hue to the entire fundus. Rarely has the uveal tract been involved and in no report has corneal disturbance been mentioned. The author was, therefore, encouraged to report the three cases of uveitis and one case of keratitis dealt with in this paper, though he states that no definite proof of the relationship could be established, except that no other etiological factor could be found. In two cases there seemed to be definite improvement coincident with the general improvement following x-ray treatment.

M. H. Post.

11. OPTIC NERVE AND TOXIC AMBLYOPIAS

Hessberg, R. **On the malarial treatment of tabes, especially tabetic optic atrophy.** Zeit. f. Augenh., 1927, v. 62, June, p. 155.

While the treatment of neurosyphilis, including tabes, with malaria is considered almost essential by many recognized clinicians, opinion on the efficacy of the same treatment in optic nerve involvement in tabes is quite divided. The danger of the tissue poisons produced by destruction of the spirochete is said by some to be increased by the malarial treatment, while others claim that malarial treatment removes the spirochetal poisons. Both views are conjectural.

David Alperin.

Horrax, Gilbert, and Haight, Cameron. **A study of the recession of choked disks following operations for brain tumor.** Arch. of Ophth., v. 57, Sept., pp. 467-473.

This report of the examination of the discs of one hundred cases of brain tumor before and following various operations upon the tumor is most interesting and instructive. Tables accompany the article showing the results from various points of view. The first table divides tumors, removed either in part or in their entirety, according to their location, whether supratentorial or subtentorial. The second table deals with decompression only, from the same point of view. In the former group the recession was 80.3 per cent, in the latter 91 per cent. In table three complete or nearly complete removal, with decompression, from the various subdivisions of the brain are reported: frontal 85 per cent; parietal 82 per cent; temporal 73.5 per cent; occipital 71 per cent; intracerebellar 89 per cent; extracerebellar 96 per cent. In table four the discs in different types of tumor are reported: supratentorial glioma 72.8 per cent; meningioma 78.6 per cent; subtentorial glioma 89 per cent; acoustic tumors 95 per cent; medullo-blastoma 72.7 per cent. The tables in each class also note the average height of the discs before operation, the average fall after operation, the time during which recession took place, and the greatest and most rapid fall in any one case. From their results the authors conclude that these operations are followed by marked recession of the preoperative papilledema, though the recession is most complete in patients with subtentorial tumors extensively removed, and least complete in supratentorial tumors operated on by decompression only. *M. H. Post.*

Kropp, Ludwig. **Differential diagnosis of Leber's familial optic atrophy.** Zeit. f. Augenh., 1927, v. 62, May, p. 57.

Leber's disease, like hemophilia and red-green blindness, belongs to the recessive, sex-limited hereditary diseases. They are transmitted through the female, who herself escapes involvement. Leber's familial optic atrophy is extinguished with every non-affected male. Consanguinity is not essential and pathogenesis is not clear. It is assumed that the papillomacular bundle is destroyed, but why between the ages

of thirteen and twenty-eight years is not known. An enlargement of the hypophysis, according to Hippel, is out of the question. Therapy is ineffective. The author gives the history of a family in which the disease was transmitted through the father. Two daughters were affected, as well as two other girls by a previous marriage. These cases serve to demonstrate that often difficulties may arise in differentiating Leber's disease from other conditions, such as arsenic poisoning, for which the first girl had been erroneously treated. *David Alperin.*

Salzmann, M. **A typical deformity of the nerve entrance (neurocele of choroid) and its ophthalmic picture.** Wien. klin. Woch., 1927, v. 40, Jan. 6, p. 20.

In 1894, before the physiologists and ophthalmologists of Vienna, Salzmann described a malformation of the optic nerve entrance as an ectropion of a retinal anlage, the condition having first been described by Szily in 1887. Since then Salzmann has changed his views as to its origin. Cases shown by Brixa, Dimmer, Szily, and himself led him to call it a "neurocele of the choroid." This condition usually appears as conus or circumpapillary atrophy, and can only be recognized with the ophthalmoscope when a vessel disappears under the edge of the retina and reappears again, giving the appearance of an opticociliary or a cilioretinal vessel. The differentiation is made by being able to follow the vessel as it makes a loop at the edge of the choroid through the thin retinal pigment layer. None of the described cases have come to histological examination. The author gives an outline of fourteen reported cases. *Beulah Cushman.*

Seissiger, J. **Glioma in the midbrain, with unusual eye symptoms.** Zeit. f. Augenh., 1927, v. 62, July, p. 246.

The author describes, in a man of forty-nine years, a case of glioma of the midbrain in which the symptoms were of doubtful significance until associated paralysis made the diagnosis of brain tumor positive.

David Alperin.

Zamkowski, J. G. **Methyl alcohol poisoning with consecutive blindness and death.** Zeit. f. Augenh., 1928, v. 65, July, p. 235.

A report of one case in which there was an unusually long latent period despite an overwhelming dose, with death on the fourth day despite excellent general condition on the first three days. Blindness, which usually comes in twelve to forty-eight hours, appeared after eighty-four hours. While ethyl alcohol is completely oxidized to carbon dioxide and water, methyl alcohol is only incompletely oxidized, and formalin is produced, which paralyses cell respiration and inhibits oxidative processes. Formic acid is a further end product which absorbs tissue oxygen, and being but slowly excreted is doubly toxic. In the presence of other alcohols the oxidation of methyl alcohol is inhibited and the formic acid is retained in the body. This explains the death of the patient on the fourth day. Not only had he drunk much alcohol in the preceding months, but he drank the methyl alcohol while intoxicated with ethyl alcohol.

F. H. Haessler.

12. VISUAL TRACTS AND CENTERS

Montalti, M. **The anterior corpora quadrigemina in man.** Ann. di Ottal., 1928, v. 56, Jan., p. 1.

As a result of original embryological and experimental study the author has verified some old and established some new relationships between these structures and the pupillary reflexes. He confirms the fact that the optic nerve fibers in entering the anterior corpora quadrigemina divide into two distinct bundles, one direct and the other crossed. The first appear to ravel out and disappear in the stratum cinereum, the second of the eight strata of the quadrigeminate bodies. The second decussate at the median line and form the commissure of the eminences and, penetrating to the cinerea profunda (or

fifth layer) contribute to the formation of the cortico-quadrigeminate pathway. The probable manner in which the light reflex is carried is as follows: The light stimulus, on passing from the retina, arrives at the anterior eminences, the primary light center, whence it is irradiated to the visual area in the cortex, being here transformed into the sensation of vision. Thence it is transmitted by the cortico-quadrigeminate pathway. It is transformed into a motor impulse through the stratum cinereum superficiale, the radial and the arciform fibres, and reaches the nucleus of the third pair. To accomplish this result, two important neurons must be present, the retino-quadrigeminal and the quadrigemino-nuclear.

F. Park Lewis.

13. EYEBALL AND ORBIT

Dinger, Georg. **Bilateral ectopia lentis et pupillæ as accompanying symptoms of a constitutional anomaly.** Zeit. f. Augenh., 1927, v. 62, Aug. p. 394.

The author argues that all cases with congenital eye symptoms should be examined for other body deformities. This case is published because beside the ectopia lentis and the corectopia it presented various skin and other lesions. *David Alperin.*

Kubik, J. **Sequels of compression of the globe by spatial displacement in the orbit.** Klin. M. f. Augenh., 1928, v. 80, April, p. 513.

Kubik discusses the case of Zentner (see below) and three from the literature with regard to astigmatism and formation of retinal folds, for which a pressure of the globe against the opposite osseous wall seems to be necessary. A further sequel of compression may be Schnabel's caverns in the optic nerve, which do not occur exclusively in glaucoma, and are caused according to Elschnig by increased current of fluids from the interior of the eye through the optic nerve backward. Hypotony occurring after exophthalmus of longer duration proves this.

C. Zimmermann.

Lotin, A. V. **On some methods of plastic restoration of the conjunctival sac in anophthalmus and in atrophy of the eyeball.** Russkii Opht. Jour. 1928, June, pp. 681-692.

The author, who had considerable experience in ophthalmic plastic surgery during and after the world war, recommends the following methods:

(1) When the depth of the conjunctival sac is insufficient, he makes a horizontal incision in the conjunctiva extending from the lacrimal caruncle to the external canthus, dissects the edges of the wound well upward and downward, and transplants upon this denuded surface a skin flap either pedicled, from the temple, and passed to the wound under a skin bridge at the outer canthus, or nonpedicled and taken from the shoulder according to the Lefort-Wolfe-Krauze technique.

(2) For restoration of the lower cul de sac he splits the lower eyelid into two laminæ, the anterior consisting of skin and orbicularis, and the posterior consisting of tarsus and conjunctiva. The anterior lamina is pulled upward, while the posterior one is lowered and is fixed in this position by means of mattress sutures. The posterior, denuded surface of the anterior lamina is then covered by a pedicled skin flap. The latter is cut from the skin of the temple in a horizontal direction so that its base is near the external canthus, while the apex is directed outward. With a forceps passed from the conjunctival sac under the external canthus, the apex of the flap is pulled in, and thus the denuded surfaces of the flaps and of the anterior lamina come into direct apposition.

(3) For restoration of the superior cul de sac the same procedure is used, but the posterior surface of the anterior lamina is covered by mucous membrane from the lip. *M. Beigelman.*

Poliak, B. L. **On the diagnosis of echinococcus of the orbit.** Russkii Opht. Jour., 1928, June, pp. 715-727.

The diagnosis of retrobulbar malignancy was made in a case of pronounced unilateral exophthalmos on

the basis of rapid and destructive growth of the tumor and of extreme cachexia in the patient. Operation revealed it to be an echinococcus of the orbit. In connection with this case the author stresses the uncertainty of clinical signs and symptoms of orbital echinococcus. He advocates the use of laboratory methods established in general medicine for the diagnosis of echinococcus, particularly of the blood count to determine the presence or absence of eosinophilia and of Ithurrat-Gazzoni's intracutaneous anaphylactic reaction. The latter is produced by intracutaneous injection of 0.2 to 0.5 c.c. of echinococcus liquid which has been freed from scalices and ova by centrifugation. This liquid can be obtained in a fresh state from any packing house. The reaction consists, if positive, of local swelling, redness, and itching. *M. Beigelman.*

Reitsch, W. **Position of lids and eyeball when the eye is closed.** Zeit. f. Augenh., 1928, v. 65, July, p. 251.

The schematic cross sections through the orbit modified in most books from Virchow or Sattler are in error in that the lid slit is placed at the level of the corneal center instead of at the lower limbus, and the eye with its axis horizontal instead of looking forward. The lower lid is drawn as thick as the upper, whereas it is actually much thinner. Because of the thinner lower lid, the upper lid often overrides the lower in spastic closure of the lids. This is also of practical importance when cleaning the eye for operation. Unless the skin of the lower is thoroughly sterilized the field of operation can become infected from it by forcible closure of the lids.

F. H. Haessler.

Zentner, P. **Unusual mucocele of the frontal sinus with compression and folding of the eyeball.** Klin. M. f. Augenh., 1928, v. 80, April, p. 508. (3 ill.)

A very large mucocele of the left frontal sinus, in a man aged thirty-two years, displaced and compressed the eyeball to such a degree in the vertical direction that the ophthalmometer indicated an astigmatic difference of 13 D. between horizontal and vertical meridians, with the rule. It also produced horizontal folds of the retina overlapping the disc from above and below. The author assumed that the folds were caused not only by shifting but also by partial detachment of the retina, perhaps due to primary formation of folds of the sclera. Stripes remaining after smoothing out of the fundus by operation upon the mucocele were proof of detachment.

Within eight weeks after operation the astigmatism was reduced to four diopters. For permanent cure broad opening of the mucocele into the nose, as adopted in this case, gives the best prognosis. *C. Zimmermann.*

Zimmermann, Stephan. **Experiences with cartilage implantation after enucleation.** Zeit. f. Augenh., 1927, v. 61, Jan., p. 63.

The method of Magitot and Doherty was used in the preparation of the cartilage for implantation. Fresh calf's rib cartilage is cut in variously sized spherical forms, one side covered with perichondrium. The implant is to be covered by the severed muscles and then by the capsule and conjunctiva. The cartilage balls are kept in two percent formalin for four weeks and then preserved in physiological salt solution. Before implantation, the cartilage balls are again thoroughly washed in salt solution. In some cases complete absorption of the cartilage took place.

David Alperin.

14. EYELIDS AND LACRIMAL APPARATUS

Brown, A. L. **A method of dilating the lacrymal duct by rapid dilatation with sea tangle probes.** Arch. of Ophth., v. 57, 1928, July 28, pp. 397-401.

In this method of procedure, advantage is taken of the fact that sea tangle swells to five or six times its original size in the presence of heat and moisture. Probes of this material are inserted into the lacrymal duct and are

allowed to remain for from fifteen minutes to one hour's time, dilating the duct as they increase in size under the heat and moisture of the lacrymal passage. *M. H. Post.*

Carsten, Paul. **Fungus concretions in the canaliculi.** Zeit. f. Augenh., 1927, v. 62, Aug., p. 368.

The author describes clinical symptomatology of fungus conjunctivitis as follows: unilateral conjunctivitis at the inner angle of the eye, redness of the caruncle with considerable though painless inflammation of the lower canaliculus. No secretions can be squeezed out on pressure, but the punctum opens, and in it one can see a mass which recedes as soon as the pressure is released. The treatment consists of slitting the canaliculus, removal of the mass, instillation of collargol, etc. *David Alperin.*

Cernet, R. **Implantation of tarsus.** Klin. M. f. Augenh., 1928, v. 80, April, p. 496.

The author describes his method of implantation of a piece of tarsus into the intermarginal incision in trichiasis and cicatricial entropium, in which incision alone would not suffice to keep the cilia away from the eyeball. He had very good results.

C. Zimmermann.

De Rosa, G. **Dystichiasis and congenital entropion.** Arch. di Ottal., 1927, v. 34, Aug., pp. 368-373.

A child of four years with hereditary lues showed entropion of the upper lids at birth. Corneal ulcers developed which were relieved by operation for entropion. The second case showed a double line of lashes, the inner rows turning in. Other anomalies present were high astigmatism and cleft palate. The entropion in the first case may have resulted from intrauterine tarsitis, while in the second case the dystichiasis was probably a developmental anomaly, the meibomian glands having developed hair follicles. (Bibliography.) *S. R. Gifford.*

Reitsch, W. **The downcast eye.** Zeit. f. Augenh., 1928, v. 65, July, p. 244.

All of the great painters of the Renaissance, and even Rubens, incorrectly painted the upper lid when the eye was looking only moderately downward. The Greeks avoided the problem entirely. The mistake made was to paint the temporal half of the lid slit as a uniform groove ending in the external canthus, which was placed too high. The fact is that the upper lid ends more temporally than the lower lid, below the level of the canthus, and completely shades the temporal third of the lower lid. Photographs and drawings support the author's assertions very clearly.

Reitsch, W. **Lid fissure and cornea.** Zeit. f. Augenh., 1927, v. 62, June, p. 145.

Reitsch discusses the lid aperture in different animals and at various ages in man. He shows that the cornea is most exposed in the infant and gradually becomes more covered with advance in age. The article has a number of photographs and goes into detail on the subject, but does not lend itself to abstraction. *David Alperin.*

Ruszkowsky, J. **The surgical treatment of blepharochalasis.** Klin. Oczna, 1928, April, pp. 10-12.

The operation proposed by the author for the treatment of blepharochalasis is based on his theory of the origin of this abnormality. The primary condition, according to Ruszkowsky, is loss of elasticity of the tarsoorbital fascia. Subsequently there is a displacement of the lacrimal gland, and finally a distension of the loose integument of the upper eyelid. The operation consists of three steps: (1) the removal of an oval piece of superfluous skin from the upper eyelid; (2) dissection of the tarsoorbital fascia and excision of an oval piece from it after preliminary insertion of two mattress sutures; (3) removal of the lacrimal gland through the opening in the tarsoorbital fascia. The results of this

surgical procedure, as seen in accompanying photographs, are splendid.

M. Beigelman.

Rutberg, M. N. **A case of fungus concretion in the canaliculus.** Zeit. f. Augenh., 1928, v. 65, June, p. 179.

A case of streptothrix in the canaliculus is described, in which a little pus could be expressed from the punctum, and in this region there was a small hard swelling suggesting chalazion. The passage was opened, and the cheesy mass scraped out with a small curette. The varieties of fungus to be considered are actinomyces, streptothrix, leptothrix and cladothrix. It is emphasized that one should think of this as a possible eliological agent in cases of chronic, particularly unilateral, conjunctivitis which seem to resist all therapy. *F. H. Haessler.*

Sander, P. **A case of congenital coloboma of the eyelids.** Zeit. f. Augenh. 1927, v. 61, Feb., p. 180.

A case of congenital bilateral coloboma of the upper lids in a child three months old is described, and illustrated. The upper lids had no puncta. Beside the lid deformities the child had an enormous umbilical hernia, and the genitalia were covered with a growth of hair twenty cm. long. The coniunctivitis, keratitis, epiphora, and dacryorrhea were cured after plastic operation on the lids.

David Alperin.

Simons, Albert. **Results with the treatment of lid carcinomata by thorium x-needles.** Zeit. f. Augenh., 1927, v. 61, Mar., p. 211.

The author stresses the superiority of radiant treatment to surgical methods in skin carcinomata, especially in the neighborhood of the eye, both from a therapeutic and from a cosmetic point of view. The most important requirement to observe is that the diseased parts be subjected to a constant amount of radiation, without affecting the contiguous healthy parts. He describes the method used and gives histories and results of cases.

David Alperin.

15. TUMORS

Cushing, Harvey, and Bailey, Percival. **Hemangiomas of cerebellum and retina:** Lindau's disease. Arch. of Ophth., v. 52, Sept., pp. 447-463.

In this exceedingly interesting paper the authors have made a careful review of this subject and have added an additional case of their own. The association between the lesions of the retina and cerebellum are clearly indicated, as pointed out in 1926 by Arvid Lindau. The typical retinal picture shown by the author's case, and described by Derby, consists in one or more prominent rounded nodules vascularized by an artery and vein both greatly distended and tortuous. In addition there are, as a rule, large areas of gliomatosis of the retina and occasionally patches of choroidal atrophy. Later, iridocyclitis, separation of the retina, glaucoma, etc. may set in.

The underlying lesion is now known to be a hemangioblastoma, a tumor which exudes plasma, and produces cysts with xanthochromic fluid contents. The cerebellum is a frequent seat of the primary lesion and it may be accompanied by cysts of the kidney, pancreas, and adrenal glands, and also by hypernephromas.

(See also A. J. O., v. 11, Oct., p. 821.) *M. H. Post.*

De Rosa, G. **Vascular mesothelioma of the bulbar conjunctiva and upper lid.** Arch. di Ottal., 1927, v. 34, pp. 76-92.

A man of sixty-five years showed a reddish tumor arising from the bulbar conjunctiva and the semilunar fold. Three months after removal it recurred in the upper lid. Sections of the primary tumor showed it to be a typical endothelioma, while the cells in the second were more undifferentiated, resembling masses of epithelial cells. The secondary growth was believed to be a metastasis by contact.

S. R. Gifford.

Lamb, H. D. **Myxoma of the orbit, with case report and anatomical findings.** Arch. of Ophth., 1928, v. 57, July, pp. 425-429.

A myxoma of the orbit was measured by Dr. Coughlin and referred to Dr. Lamb for pathological study. The paper reports the gross and microscopic anatomy of these tumors, the usual locations, and the clinical course. The author notes that the optic nerve is especially susceptible, involvement here occurring chiefly in young subjects. Operations for removal of the growth are usually successful, but blindness commonly results. The author was able to find the report of only one such case in the literature.

It is not quite clear, in view of the paucity of the literature, whence the author derives his conclusions with regard to ease of removal and the apparent immunity of the globe from invasion. *M. H. Post.*

Marlow, S. B. **A case of hemangioma of the choroid.** Arch. of Ophth., v. 57, Sept., pp. 484-487.

The patient, a medical student, complained of defective vision of the left eye, growing worse. He had a port-wine-colored capillary nevus on the left side of the forehead, which included the whole upper left lid. The macula of this eye was lighter in color than the right, suggesting detachment of the retina, though the vessels were not distorted. There was a relative scotoma ten degrees in diameter just below the fixation point. The case rapidly became worse. The retinal detachment increased and retinal exudate appeared. The tension about three years after the first observation was forty-three mm., on which account the eye was removed. Dr. Verhoeff made an examination of the eyeball and found the choroid almost completely replaced by large thinwalled sinuses containing blood. The walls were composed of a single layer of epithelial cells. These sinuses were frequently immediately adjacent to one another and occasionally intercommunicated. The lens showed complicated cataractous changes. It would seem that in the presence of the vascular nevi which have occurred in fifty per cent of these cases, with separation of the retina and deep retinitis, a diagnosis of hemangioma of the choroid is justified.
M. H. Post.

Rifaat. **Three cases of primary sarcoma of the lids.** Ann. d'Ocul., 1928, v. 165, July, pp. 508-514.

Three cases of this rare affection were seen by the author in a short period of time. There was nothing atypical in the cases, but they are reported by the author because of the infrequency of the condition.
L. T. P.

Safar, Karl. **Carcinoma of the tarsal conjunctiva in a twelve year old boy.** Zeit. f. Augenh., 1927, v. 62, July, p. 261.

The case is very rare as to both age and location. These cases are easily mistaken for tarsal tumors, or as in this case for tuberculosis of the lids, so that histological examinations should be made. This is much more important than in ordinary epitheliomas, because of the very rapid metastasis in the regional lymph nodes. He gives an abundant bibliography regarding lid tumors. *David Alperin.*

Schindler, Emma. **Hemangioendothelioma of the upper lid and orbit in infancy.** Zeit. f. Augenh., 1928, v. 65, June, p. 150.

Of orbital tumors which grow forward so as to protrude to the under surface of the upper lid, or those that have their origin there, the angiomata are distinctive in that they vary in size with pressure on the venous system. They are usually noted at birth or soon after, grow rapidly, have a turgid, elastic consistency, and can be made to vary in size with pressure. They usually occur in the upper inner quadrant of the orbit. There is little tendency to erode the bone or to metastasize. Early radical surgical removal is indicated, exercising care to dissect bluntly and to ligate the afferent ves-

sels, followed by radiotherapy. Vascularity of the neoplasm and age of the patient are not contraindications. Five cases are reported with histological study. Four were angiomata and one a fibroangioendothelioma.

F. H. Haessler.

Teräskeli, Hilja. **Prognosis of malignant intraocular tumors.** Acta Ophth., 1928, v. 6, no. 2, pp. 110-131.

Teräskeli reviews the history of the fifty-five malignant intraocular tumors observed at the Helsingsfors University Eye Clinic from 1873-1911. There were thirty-three uveal sarcomata, one choroidal carcinoma, and twenty-one gliomata. Of the sarcomata sixty-eight per cent recovered, twenty-one per cent metastasized, and ten per cent recurred locally. X-ray treatment of the gliomata was unsuccessful except in one recent case. The article offers nothing essentially new in our knowledge of these malignant neoplasms.

E. M. Blake.

Uchermann, Aksel. **Carcinoma metastasis and x-ray treatment.** Acta Ophth., 1928, v. 6, no. 2, pp. 170-172.

Uchermann's patient was a woman of thirty-five years with inoperable breast carcinoma. There was marked and rapid loss of vision and both retinæ showed ophthalmoscopically, "from the center outward to the periphery, grayish-white, somewhat pigmented parts, from the size of a grain of corn up to several disc-widths," and elevated four or five diopters. Vision was R. 5/50, L. fingers at three meters. Three doses of 0.5 H.E.D. x-ray at thirty cm. filtered through 0.5 mm. zinc x 4 mm. aluminum were given each eye. After four weeks vision had improved to L. 5/50 and R. 5/10. The final outcome is not stated, nor was microscopic study possible.

E. M. Blake.

Watton, H. W. **A case of glioma of the optic nerve.** Arch. of Ophth., 1928, v. 57, July, pp. 377-379.

By a Krönlein operation a tumor mass was removed with the optic nerve, which it surrounded. It extended from two mm. behind the bulb to the optic foramen, was smooth, firm, and symmetrical throughout, dark grey in color, seven to eight mm. in diameter. The eye was saved.

The diagnosis of glioma was made from pathological specimens. Of recent years it has been conceded that the majority of such tumors are gliomas. They are very rare. If confined to the orbital cavity they are usually benign and do not metastasize following operation. *M. H. Post.*

Zeiss, Erich. **A case of chloroma.** Zeit. f. Augenh., 1927, v. 62, Aug., p. 373.

Describes a case of chloroma with the usual glandular involvment and eye symptoms. *David Alperin.*

16. INJURIES

Camison, A. **New technique for radiography of intraocular bodies.** Arch. de Oftal. Hisp.-Amer., 1927, v. 27, Sept., p. 565.

This method is essentially that elaborated by Vogt, and consists in obtaining a radiograph of the anterior and of a portion of the posterior eye segments, without the shadows of bony structures. Small films three or four centimeters in width and six to eight in length are employed as in dental radiography. It is necessary to use double films in order to rule out defects in the surface of one which might be interpreted as foreign bodies. These are enclosed in smooth light-proof coverings. One end is cut into a slightly rounded tip. The conjunctiva is anesthetized, and with the patient looking forward the rounded tip is shoved deeply into the inner side of the orbit parallel with the nasal wall. Three exposures are made, one looking directly forward, one upward, and one downward. For this the tube is placed on the temporal side. For the second position the tip of the film is placed in contact with the lower lid externally, and is pushed into the orbit as far as possible. The tube is placed forward so that the ray forms an angle of sixty

degrees with the horizontal. This eliminates shadows of the frontal bone. One exposure is made looking upward, the other looking downward. During these exposures the films must remain absolutely immobile, and this is facilitated if they are held in the grasp of Kocher forceps. The relative movements of the foreign body in the various positions assumed by the globe gives quite an accurate estimate of its position. *A. G. Wilde.*

D'Osvaldo, Ettore. **Clinical contribution on the effect of phosgene gas.** Ann. di Ottal., 1928, v. 56, Feb., p. 154.

A man having the care of war projectiles undertook by means of a lathe to cut off the point of a hand grenade which was filled with phosgene gas, causing it to expode. He received the full effect of the contents in his face and eyes and was immediately enveloped in a mist of gas. The face and lids became red and swollen; the cornea opaque with necrosis of the epithelium such as commonly follows an acid burn. The opacity prevented a view of the iris or pupil. In a few days the injury was followed by deep infiltration, corneal ulceration, and hypopyon, with prolapse of the endobulbar tissues and loss of the eye. At the end of a year there was symblepharon and adhesion of the orbital tissues. The result was so much more serious than that usually following an injury from phosgene gas that the author concludes that the gas must have had in it some bromine and chlorine to produce so serious an effect. *Park Lewis.*

Heckel, E. B. **Foreign bodies in the orbit.** Atlantic Med. Jour., 1928, v. 31, June, p. 644.

This is the report of two cases, in neither of which was the eyeball injured. In one case the foreign body was steel, 1 inch long and 0.5 inch wide; but the giant magnet failed even to show it magnetic. An incision was made over the antrum, and the fragment extracted with a hand magnet. In the second case a piece of brass wire, 64 gauge, 2 cm. long, entered the orbit. Radiograms seemed to show it in the frontal sinus; which was opened, but the wire not found. The sinus was filled with bismuth paste, and another radiogram showed the wire outside of it. A probe was inserted along the roof of the orbit. Two radiograms then showed the location of the wire, and it was withdrawn with artery forceps, the pulley of the superior oblique being held aside. In each case recovery was uneventful, and the eye retained good vision. A slight diplopia in the second case disappeared after a few weeks. *E. J.*

Loddoni, Giovanni. **Case of ocular hysteria.** Ann. d'Ocul., 1928, v. 165, May, pp. 358-365.

A nineteen year old girl was struck in the left eye by a small fragment of metal. For several days thereafter about three times a day a few drops of blood were extruded from the conjunctival sac. The cornea and conjunctiva and the skin of the lids were anesthetic. Blepharospasm with mydriasis, amaurosis, and then amblyopia for varying periods of time followed. There was also an associated convergent spasm of the right eye. Vision and fundus of the left were normal. A nystagmus also occurred in the left eye. Following the removal of a second piece of metal located subconjunctivally the hemorrhages ceased. These may have been from the foreign body irritation. The associated symptoms were regarded as hysterical.

L. T. P.

Lundsgaard, K. K. K. **Transitory depigmentation of the iris following a bee sting of the eyeball.** Acta Ophth., 1928, v. 6, no. 2, pp. 181-183.

Following a bee sting of the sclera over the ciliary body, Lundsgaard's patient developed an opacification of the entire parenchyma of the cornea. The iris was invisible. Vision was reduced to counting fingers close to the face. Tension normal. As the cornea cleared the previously dark brown iris was found to be pale blue except for

an area up and nasally. Within six months the iris began to assume a brownish cast, and at the end of two years no difference between the two eyes was noticeable to casual inspection. The pigment was not, however, diffusely spread, but was situated in small sharply demarcated patches, close together. No glaucomatous symptoms, cataract, or iridocyclitis occurred, but a decrease in myopia was noted. *E. M. Blake.*

Pick, L. **A disease of the eye and of the mucous membrane from mushroom exhalations.** (Industrial epidemic.) Zeit. f. Augenh., 1927, v. 61, April, p. 325.

This disease is considered as a new industrial disease. It was noticed to occur periodically in a few factories handling a certain mushroom in the canning industry. It was characterized by definite eye symptoms: intense pain especially at night, photophobia, blurring and sometimes marked visual disturbances, cough, and dyspnea; with anorexia, occasional vomiting, jaundice, and fever. A corneal affection resembling a superficial diffuse epithelial keratitis is one of the principal symptoms. Punctate infiltrations seen with the corneal microscope and slit-lamp were not stained by fluorescin and could not be seen with the loupe. In a later stage these spots could be stained with fluorescin. No fundus changes were noticed.

David Alperin.

Quint. **Siderosis and binocular vision in one-sided aphakia.** Klin. M. f. Augenh., 1928, v. 80, April, p. 462.

A chauffeur, aged twenty-three years, presented total cataract of his right eye with discoloration of the iris and orange-colored dots on the anterior capsule. The sideroscope gave a positive test on the lower ciliary region. Upon questioning the patient, he remembered that seven months previously something had flown into his eye. A piece of iron 1.5 millimeters in length was drawn by the giant magnet into the iris and extracted with iridectomy, and after two months the cataract was extracted. Five months later examination with the slit-lamp disclosed no trace of siderotic discoloration, thus showing the possibility of spontaneous complete disappearance of siderotic discoloration after extraction of the foreign body. An attempt with subconjunctival injections of grape sugar is recommended, according to the observation of Ward that this accelerates the elimination of iron fixed in the tissue, by converting colloidal iron into the crystalloid or soluble form.

With the right eye's aphakic refraction corrected by plus 10. sph. plus. 2.00 cyl., the patient showed binocular vision in all tests. This is said to be a matter of patience, which the author recommends in such cases.

C. Zimmermann.

Roy, J. N. **Electric flash.** Ann. d'Ocul., 1928, v. 165, June, pp. 433-441.

This paper is the report of one case in which an eye was exposed unprotected for eight minutes to a brilliant welding light. The usual external irritation followed but soon disappeared. Vision shortly afterward began to fail in one eye, and in the course of months the patient became practically blind in this eye. Ophthalmoscopic examination revealed a muscular lesion and optic atrophy. The author considers the damage to have been done by the visible ray. He appends a long bibliography. *L. T. P.*

Sallmann, L. **Atypical chalcosis corneæ from defective treatment with copper sulphate stick.** Zeit. f. Augenh., 1927, v. 62, June, p. 180.

Two cases of corneal staining due to neglect in removing the excess of the copper after treatment.

David Alperin.

Urbanek, J. **Copper staining of the eye.** Zeit. f. Augenh., 1927, v. 62, June, p. 175.

The author's case presented a sunflower-shaped figure on the anterior lens capsule. He believes that the copper salt deposits are not limited to the epithelium of the cornea but pene-

trate as far back as the posterior lens cortex. The fundus, apart from many strands of retinitis proliferans, showed no trace of a foreign body.

David Alperin.

17. SYSTEMIC DISEASES, INCLUDING PARASITES

Bernaud, George. **Menstruation and tuberculosis of the eye.** Zeit. f. Augenh., 1927, v. 61, April, p. 315.

A series of interesting animal experiments indicated a definite relationship between menstruation and tuberculosis. In a number of patients such relationship was clinically demonstrated to some extent, but no positive diagnosis of tuberculosis could be established. It was noticed that patients suffering with tuberculosis complained of visual disturbances during their menstrual periods. The author considers ocular tuberculosis a metastatic local manifestation of generalized tuberculosis and not a localized condition.

David Alperin.

Blatt, N. **Ocular changes in malaria.** Klin. M. f. Augenh., 1928, v. 80, April, p. 468. (1 ill.)

In the summer months of 1917 and 1918 Blatt saw in Bosnia and Albania, where malaria is endemic, a large number of cases, and devoted special attention to affections of the eyes caused by malaria. Almost all parts of the eye may be involved, with predominance of inflammatory process. Consequences of inflammatory changes in the blood vessels, especially hemorrhages, were frequently observed in all parts. The hemorrhages of the retina occurred in patches and streaks, but differed from those of albuminuric retinitis. In a few severe cases they were followed by detachment of the retina or retinitis proliferans, and often small yellowish white foci of degeneration were seen around the fovea. The optic nerve was more rarely affected, but there were a few cases of optic neuritis, two terminating in atrophy. Choroiditis and iritis were frequent, but a direct development of cataract was not encountered. The ocular palsies are ascribed to the influence of changes of the blood and vessels on the nuclei, or in milder cases to toxic conditions. The affections of the cornea, of which a case is described in detail, are attributed to trophic disturbances due to vascular alterations.

The ocular complications usually set in during or shortly after a malarial attack, which is readily comprehensible as the attack is elicited by the exit of sporozoids from blood corpuscles and entrance into other healthy blood corpuscles. Then the toxicity of the blood is highest, leading to obstruction of the lumen by retardation of the current by the infected red blood corpuscles and by increased viscosity between them and the vascular walls in the presence of a toxically damaged intima. Local treatment was of no avail, but large intravenous injections of quinine generally yielded the desired result.

C. Zimmermann.

Chambers, S. C. **A review of the literature on the treatment of syphilitic eye disease.** Arch. of Ophth., 1928, v. 57, July, pp. 412-423.

This paper presents a valuable outline of the more modern therapeutics of syphilitic lesions of the eye. The author discusses the subject under various subheadings. The first of these considers ocular syphilis as a manifestation of a systemic disease. The importance of hygiene, and of a search for foci of infection, is the next phase of the subject dealt with. Then, in turn, the Herxheimer reaction, arsphenamine and mercury, nonspecific therapy, and tryparsamide are also considered. Interstitial keratitis and optic atrophy are taken up individually. There is a bibliography of seventy references.

M. H. Post.

Fileti, Antonino. **Ocular changes in leukemia.** Ann. di. Ottal., 1928, v. 56, Feb., p. 97.

In addition to the golden orange color of the ocular fundi and the characteristic appearance of the blood vessels long since described by Liebreich,

the writer notes certain ophthalmic appearances with their histological significance as demonstrated microscopically.

The choroid is thickened by reason of the dilatation of its vessels, an infiltration of leucocytes invading its stroma. Edema of the retina and papilla are often present. The cornea sometimes is slightly turbid, with an appearance of opalescence in its periphery. The condition is one of intense stasis caused by obstruction of the efferent lymphatics by the lymphatic corpuscles. *Park Lewis.*

Igersheimer. **Congenital syphilis and the eye.** Klin. Woch., 1926, v. 5, Dec. 3, p. 2314.

The author takes up the subject under three heads, the clinical manifestations and the scientific and social problems. From the social standpoint eight to fourteen per cent of blindness in the young the author attributes to congenital lues, and because of this he feels that an individual with congenital lues should not marry unless he or she has been clinically free from symptoms and also Wassermann negative for at least two or three years.

Beulah Cushman.

Melanovski, W. H. **Cysticercus of the visual apparatus.** Klin. Ocena, 1928, July, pp. 55-72.

After a brief review of the history and statistics of cysticercus of the eye, the author discusses the localization of the parasite under the conjunctiva, under the skin of the eyelid, in the orbit, in the anterior chamber, under the retina, and in the vitreous body. He reports four new cases of his own. In two of these cases the cysticercus was found under the conjunctiva in the region of the semilunar fold, and in both of them an incision evacuated some yellow-brownish fluid containing a cyst with the parasite. In one case a small tumor, about the size of a pea, localized under the skin of the lower eyelid, when extirpated and examined pathologically, proved to be a cysticercus. A subretinal cysticercus the author removed uneventfully through a scleral incision; and considerable improvement of visual acuity and of the field of vision followed.

M. Beigelman.

Morgano, P. **The individual constitution in ophthalmology.** Arch. di Ottal., 1927, v. 34, July, pp. 324-333.

A review of the work of Italian oculists since the time of Scarpa who have insisted upon the necessity of considering the eye in its relation to the organism in general. *S. R. Gifford.*

Mylius, K. **Sarcoid of Boeck and the eye.** Zeit. f. Augenh., 1928, v. 65, May, p. 71.

This disease has been frequently discussed in the dermatological literature, and it is the consensus of opinion that the tuberculous lesions are not limited to the skin but that they are metastases of a generalized disease which is probably a benign miliary lupoid. The eye, too, becomes involved, and, aside from conjunctivitis and keratitis, iridocyclitis indistinguishable from tuberculous iridocyclitis is observed. The course is variable. The process may become arrested very early or may proceed to destruction of the eye. Therapy is of no avail. The clinical data of two cases are reported.

F. H. Haessler.

Rossi, V. **The pathology of the individual in ophthalmology.** Arch. di Ottal., 1927, v. 34, Aug., pp. 357-367, and Sept., pp. 392-423.

Hereditary ocular anomalies and diseases are considered in their relation to Mendel's laws. The embryogenesis of the coats of the eye is considered in its relation to the development of the body. The factor of constitution in diseases such as vernal catarrh and glaucoma is emphasized. Tuberculosis, which affects chiefly mesodermal tissues, involves principally the uveal coat of the eye, while syphilis in certain stages may show a predilection for either mesodermal or ectodermal structures. Follicular conjunctivitis, adenoid hypertrophy, and

lymphatism may be considered as diseases of the reticuloendothelial system. *S. R. Gifford.*

Sarbo, Arthur. **New eye symptoms in neurology.** Klin. Woch., 1927, v. 6, Sept., p. 1802.

The author reports that of 255 cases of postencephalitic Parkinsonian symptoms he found the eye muscles involved in thirty-three. Fluttering of the lids was the most frequent incident. Disturbance of convergence was present in forty cases, and changes in the coordinated movements were found. One woman of twenty years had daily attacks of marked flexion of the body muscles, and the eyes in position of maximum convergence. In another young patient the eyes turned upward and back for an hour at a time. A most noticeable "paretic" symptom is elicited when the patient stands with eyes closed and feet together and leans backward with head and upper part of body; he makes a few steps backward, being unable to maintain his position. This symptom is always indicative of a peduncular lesion.

Beulah Cushman.

Stewart, D. S. **A case of bilateral sphenoidal empyema with mainly ocular manifestations.** Brit. Jour. of Ophth., 1928, v. 12, Aug., p. 413.

This is the case record of a man aged forty-two years, who during the preceding six months had experienced severe frontal headache. For four months he had noticed a color disturbance in his vision, particularly a blue veil over white. The fields were markedly reduced, particularly the left. Central color was uncertain. No definite central scotoma was observed. Vision equalled 6/18. There being a nasal discharge, his sphenoids were examined, and pus was withdrawn. Vision and fields improved. About two weeks later the patient had a sensation of swelling followed by a feeling of it bursting. A few days later vision equalled 6/6. The left field was about half normal in size, and the right practically normal. *D. F. Harbridge.*

Thierry, J. H. **A case of submacular cysticercus: extraction and recovery.** Acta Ophth., 1928, v. 6, no. 2, pp. 165-169.

A man of twenty-one years presented himself to Thierry because of poor vision in the right eye. There was a round, greenish-white prominence in the macular region and a large central scotoma. The head of the cysticercus could be seen and an undulatory movement was visible inside the sac. There was one subcutaneous cyst in the upper eyelid and several over the thorax. Following a vermifuge numerous segments of the tenia solium were evacuated. The operation consisted in division of the external rectus, drawing the eye forward and rotating it by means of a strabismus hook passed around the optic nerve. After incision of the sclera in the horizontal meridian the wound was made to gape by use of two iris hooks and the cyst was evacuated. The patient made a good recovery, with vision of finger counting at three meters and a gradual decrease in the size of the scotoma. The cysticercus measured two mm. long and had twenty-six hooklets in front of the four suckers. The author recommends this mode of attack for intraocular foreign bodies situated near the posterior pole.

E. M. Blake.

Vormann, D. **Parasites in the vitreous with reference to difficulties in diagnosis; report of suspected case of cysticercus.** Zeit. f. Augenh., 1927, v. 62, Aug., p. 381.

The author gives a complete clinical description of the fundus with animal parasites in the eye; with historical description and bibliography.

David Alperin.

Wexler, David. **Ocular depigmentation accompanying generalized vitiligo.** Arch. of Ophth., 1928, v. 57, July, p. 393-396.

Cases of depigmentation of the skin of the eyelids and surrounding parts have been reported for years, and occasionally disease of the eye has ac-

companied it. The author reports a case of bilateral chronic uveitis, chronic secondary glaucoma, bilateral chorioretinal depigmentation, and partial depigmentation of the conjunctiva and iris of the left eye. The author believes that these ocular disturbances were incidental to the disturbed pigment function in the eye. *M. H. Post.*

Zimmermann, E. L. **The röle of the arsphenamines in the production of ocular lesions.** Arch. of Ophth., v. 57, Sept., pp. 509-530.

This paper deals in general with three types of ocular reaction. The first is the direct toxic action on the normal eye. The second and third deal with more serious reactions, dependent upon the existence of previous syphilitic changes in the tissues. The first of these latter, or number two in our classification, is the Jarisch-Herxheimer, and the third is oculorecurrence, that is, iridorecurrence and ocular manifestations of neurorecurrence. Generally speaking, the use of antisyphilitics should be carefully watched, so as to prevent these unfortunate sequelæ, and when treatment appears to be interfering with vision, as in some cases of tabetic optic atrophy, intensive treatment with arsphenamines should be omitted or used with great caution. The three aforementioned reactions are then dealt with in detail.

The first group, true toxic reactions, are in the opinion of the author seldom of serious import. Conjunctival hyperemia, he believes, is the only true toxic arsphenamine reaction in the normal eye. He believes that other disturbances are due to previously damaged vessels or abnormal tissues not so recognized before treatment is instituted.

Under the second heading, ocular Jarisch-Herxheimer reactions, are considered uveitis, iritis, cyclitis, both active and quiescent, the extension of limited lesions to previously uninvolved tissues, and the effect on choroiditis and keratitis. This reaction is rare in all of these conditions, but in optic neuritis and tabetic optic atrophy, on the other hand, it frequently occurs, especially in the latter type. The author believes that in cases of marked limitation of the field it is better to forego intensive treatment, rather than to risk loss of the remaining vision. He states that it is a recognized fact that the intensity of this reaction cannot be predicted. He feels that a preliminary course of either mercury or bismuth should be employed, or that the initial dose of arsphenamine should be very small.

Neurorecurrences and iridorecurrences follow insufficient treatment of the primary or secondary types of syphilis. It is believed that the initial treatment destroys most of the organisms and with them those protective mechanisms which develop under normal circumstances. Some of these organisms withstand this first treatment and eventually resume their activity. Now meeting with none of the normal factors of resistance, they proliferate freely, attacking principally the central nervous system and the uvea. Neurorecurrences are characterized by involvement of the optic, oculomotor, abducens, or trochlear nerve. Iridorecurrences are least common. Experimental work in rabbits has shown that various tissues are attacked, generally speaking, in a given order, the iris one of the last. When these recurrences do take place, they are characterized by great rapidity of development. Both types of lesion are characterized by certain features. First, they take place about five weeks after intensive treatment for early syphilis; second, the reactions are severe, with little improvement from antisyphilitic treatment; third, they are very extensive; fourth, the exudative reaction is great and syphilomas in the uvea are relatively frequent; fifth, in line with the explanation of these attacks, the Wassermann test is frequently negative at first. Their prevention depends upon a long continued systematic course of treatment, rather than a tremendous initial dose incompletely followed up.

M. H. Post.

18. HYGIENE, SOCIOLOGY, EDUCATION AND HISTORY

James, R. R. **Communications. Ophthalmic leechdoms.** Brit. Jour. Ophth., 1928, v. 12, Aug., p. 401.

This communication deals with excerpts from three volumes published in the Rolls Series by Rev. Oswald Cockayne, 1865, 1866, and entitled "Leechdoms, Wortcunning, and Starcraft in Early England." The first volume, Herbarium, contains an indexed arrangement of herbs used for ophthalmic complaints, generally for sore eyes. The second volume consists of three parts, the first two on medicine and the third monkish in character. The third volume is quite varied and devoted largely to dreams, charms, and a glossary. Interesting and strange methods of treatment by mineral substances are referred to, but it must be remembered that the work deals with a period some nine hundred years ago. *D. F. Harbridge.*

Menestrina, G. **A new type of stereoscopic photography.** Arch. di Ottal., 1926, v. 33, Nov., pp. 487-498.

The author makes use of the principle of making two photographic images on one plate, producing a marked impression of perspective. Two hollow cylinders 67 mm. apart lead into a single camera obscura, being made to focus on one screen by plus 3.25 D. lenses decentered inward, and prisms base in. Screens of complementary colors are placed before the two objectives, and by varying the decentering of the lenses they are made to focus on parts of the scene at different depths. Thus objects in the foreground of his photographs are seen in marked relief from their backgrounds. The same principle may be applied to the projection of images on a screen.

S. R. Gifford.

Truc, H. **The origin of official instruction in ophthalmology in the faculties and schools of medicine in France.** Arch. d'Opht., 1928, v. 45, July, p. 417.

A historical review of the teaching of Ophthalmology in France is given, showing that the credit for the first official instruction in ophthalmology belongs to France and not to Germany. The chair of Vienna was established in 1772 and that of Paris in 1765. The first special chair of clinical ophthalmology in France was established at Lyon in 1788. *M. F. Weymann.*

Wanecek, Ottokar. **The Viennese sight conservation school and its method.** Zeit. f. Augenh., 1927, v. 61, Mar., p. 251.

The author gives the various occupations for men and women with defective sight and methods for training them. The article does not lend itself to abstraction. *David Alperin.*

NEWS ITEMS

News Items in this issue were received from Drs. Chalmer M. Harger, Seattle; G. Oram Ring, of Philadelphia; Lyle M. Sellers, Dallas, Texas; and Walter M. Yost, of Rochester, Pennsylvania. News items should reach **Dr. Melville Black**, Metropolitan Building, Denver, by the twelfth of the month.

Deaths

Dr. Robert Fagin, Memphis, Tennessee, aged forty-five years, died August 7, as the result of a cerebral hemorrhage.

Dr. John Higbee Johnson, Wichita, Kansas, aged sixty-eight years, formerly professor of ophthalmology in the College of Physicians and Surgeons, Kansas City, Kansas, died September fourth of paralytic ileus.

Dr. Charles Stough Rebuck of Harrisburg, Pennsylvania, aged fifty-four years, died September 9, 1928, of acute nephritis.

Miscellaneous

Largely owing to the activity of the National Society for the Prevention of Blindness, sight-saving classes have been established in eighty cities.

Societies

The newly elected officers of the Dallas Academy of Ophthalmology and Otolaryngology are: president, Dr. John G. McLaurin; secretary, Dr. W. Mood Knowles; corresponding secretary, Dr. Lyle M. Sellers. The Academy meets at the Dallas Athletic Club on the first Tuesday of each month from October to June. The November, January, and March meetings are devoted to clinical work.

Personals

Dr. Paul Sartain of Philadelphia made his usual summer trip to Europe and returned late in September.

Dr. Walter M. Yost of Rochester, Pennsylvania, calls our attention to a former news item in which his location was placed in another state.

Dr. Chalmer M. Harger, of Seattle, since Ocober 1, has been associated with Dr. Frederick Bentley in the practice of ophthalmology.

Dr. and Mrs. Howard Forde Hansell of Philadelphia have returned from a four months' stay in France, which was about equally divided between Paris and Vittel.

Dr. and Mrs. L. Webster Fox of Philadelphia spent their summer on the south coast of England, mainly at Bournemouth, and returned to Philadelphia late in September.

Dr. and Mrs. William Campbell Posey of Philadelphia, who with their children spent the summer abroad, returned to America during September.

Dr. and Mrs. H. Maxwell Langdon have returned to Philadelphia after a summer visit to Europe. In London Dr. Langdon again gave himself the pleasure of visiting Moorfields, where he was clinical assistant in 1902. Dr. Langdon has recently been elected to professorship of ophthalmology in the Graduate School of the University of Pennsylvania.

Dr. and Mrs. G. Oram Ring of Philadelphia have returned from Europe after a motor tour which included a visit to Barcelona for the purpose of seeing the work of Dr. Ignacio Barraquer in his private and public clinics. They had a very delightful stay in the Spanish city and later entertained Dr. and Mrs. Barraquer in Paris.

Dr. George E. de Schweinitz of Philadelphia, who recently returned after a summer trip to Europe, gave a dinner on Friday evening, September 28, at his home, 1705 Walnut Street, in honor of Professor George Weill of the University of Strassburg and his son Mr. Robert Weill of the department of biology of Woods Hole, Massachusetts.

Clarence E. Ferree, Ph.D., has been made resident lecturer in ophthalmology and director of the laboratory for physiologic optics, Johns Hopkins University. His wife, Gertrude Rand, Ph.D., will be associate professor of ophthalmology. Dr. Henry F. Graff will be assistant in clinical ophthalmology.

At a banquet at the Chase Hotel, Saint Louis, during the annual meeting of the American Academy of Ophthalmology and Otolaryngology, Dr. Park Lewis of Buffalo was presented with the Leslie Dana medal "for the most outstanding achievements in the prevention of blindness and the conservation of vision" in America. A short presentation speech was made by Dr. Edward Jackson, who in 1925 was the first recipient of the medal.

Dr. Rafael Silva, whose paper on cysticercus appears in this issue, is president of the Academy of Medicine of Mexico, and member of a number of ophthalmological societies outside of his own country, as well as occupying several important clinical positions in Mexico City.

Dr. Edward Jackson of Denver recently sustained the very sad loss of his youngest daughter, Helen. Miss Jackson was engaged in social welfare work. She was unusually gifted and had a very bright future. Her death was tragic. Following the extraction of a tooth, Miss Jackson had a pharyngitis and evidences of general streptococcic infection, with a low leukocyte count, "agranulocytosis."

The American Academy of Ophthalmology and Otolaryngology, Saint Louis, October 15 to 19, 1928

The Saint Louis meeting of the Academy was an extremely successful one. Organization was excellent. The total registration of members was 749, and there was also a large attendance of lady guests. The tremendous popularity of the instructional program is demonstrated by the fact that between five and six hundred members were in attendance at this course at one time, distributed through twenty-three rooms on the fourteenth floor of the Statler Hotel.

On Monday, October 15, the ophthalmologic and otolaryngologic examining boards held their examinations at Washington University, where ample facilities and generous cooperation were afforded. In lighter mood, following a very successful golf tournament (in spite of a little rain), over a hundred golfers sat down to a dinner at which a number of prizes were awarded. The Saint Louis cup, for the low score for eighteen holes, was awarded to Dr. George J. McKee of Pittsburgh, whose score was seventy-six.

The usual joint session was held on Tuesday morning, when the address of the president, Dr. Luther C. Peter, was followed by a symposium on the visual pathways. Dr. Edward Jackson, guest of honor, was unforunately indisposed at that time, and his

address on "Changes in refraction" was therefore not presented until the business meeting on Wednesday evening.

The annual banquet on Tuesday evening was attended by over four hundred members and guests. A flower was collected from each table and the combined bouquet sent up to Dr. Jackson during the banquet as an expression of regret that he was unable to be present on that occasion.

At the business meeting on Wednesday evening Drs. Hiram Woods and Edward Jackson were elected life members of the Academy, and Dr. Jackson, as the guest of honor, was the recipient of a very handsome solid gold medal. This medal carries on the obverse, beside the name of the Academy, a classic figure of Æsculapius, with a serpent twined around his arm, and drinking from the cup of health; and on the reverse the esculapian staff, in addition to an honor wreath, the recipient's name, and the date.

The officers of the Academy for the ensuing year are: president, Dr. Harris P. Mosher, Boston; president elect, Dr. Wm. H. Wilder, Chicago; first vice-president, Dr. Frank Burch, St. Paul; second vice-president, Dr. Harry Lyman, St. Louis; third vice-president, Dr. John H. Dunnington, New York; treasurer, Dr. Secord H. Large, Cleveland; editor of transactions, Dr. Clarence Loeb, Chicago; executive secretary, Dr. Wm. P. Wherry, Omaha; secretary for ophthalmology, Dr. Wm. L. Benedict, Rochester, Minnesota; secretary for otolaryngology, Dr. John Myers, Kansas City; secretary for instruction, Dr. Harry Gradle, Chicago; member of council, Dr. John J. Shea, Memphis; member of American Board for Ophthalmologic Examinations, Dr. John M. Wheeler, New York.

The number of members of the Council elected from the general membership was increased to four. The treasurer reported a very material growth in the reserve fund of the Academy. The sum of $4,000 was appropriated for research work, including $2,000 for work on the crystalline lens under the supervision of Dr. D. B. Kirby of New York, and $2,000 for work on the physiology of the labyrinth by Dr. W. J. McNally of Montreal. The sum of $500 was appropriated for expense at the Army Medical Museum in connection with the plan of cooperation between that museum and the Academy for the development of a loan collection of pathological specimens. Important recommendations were adopted for provisions safeguarding the funds of the Academy, both as to investments and as to expenditures.

At this meeting the Academy elected the remarkable number of 147 new members, so that the total membership of this powerful and useful organization is now over 1,600.

The next meeting will be held at Atlantic City, probably in the third week of October, 1929. Announcement was made that Professor Marx, secretary of the International Ophthalmological Congress to be held in Amsterdam in September, 1929, had arranged with Messrs. Thomas Cook and Sons to act as the official travelling agency for the Congress. The arrangement for meeting at Atlantic City next year will give a favorable opportunity for those members of the Academy who attend the international congress to include the Academy meeting as a closing feature of their itinerary.

Organization of Ophthalmic Publishing Company

The Ophthalmic Publishing Company was organized in 1917 to publish a monthly journal and other publications relating to ophthalmology. The new journal, since known as the American Journal of Ophthalmology, continued the name of the journal established by Adolph Alt in 1884, and succeeded the Ophthalmic Record (Giles C. Savage, 1891; Casey A. Wood, 1897), Annals of Ophthalmology (James Pleasant Parker, 1892), Anales de Oftalmologia (M. Uribe Troncoso, 1898), Ophthalmology (Harry Vanderbilt Würdemann, 1904), Ophthalmic Year Book and Ophthalmic Literature (Edward Jackson, 1904, 1911). The annual meeting of the stockholders is held in Chicago on the second Tuesday in June. The present directors are as follows: president, Dr. Edward Jackson, Denver; treasurer, Dr. Clarence Loeb, Chicago; secretary, Dr. Charles P. Small, Chicago; Dr. Lawrence T. Post, Saint Louis; Dr. H. W. Woodruff, Joliet, Illinois; and Dr. Wm. H. Crisp, Denver. The stockholders, more than one hundred in number, have been active ophthalmologists.